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ABSTRACT

A profile of U.S. citizen foreign medical graduates (USFMGs) was developed from the point of entry to foreign medical school, through selection of a specialty, to establishment of a medical practice. Variables that determine USFMGs' choice of specialty and practice location were determined, using decision models and multinomial logit techniques. Questionnaire responses were obtained from 463 USFMGs who had graduated during 1970-1979: 112 residents and 351 practicing physicians. Study areas include the following: socioeconomic background, characteristics of the foreign medical education, entry into the U.S. medical delivery system, licensure, measures of academic ability and educational background, characteristics of medical schools attended, factors involved in specialty choice, specialty board certification, the type and location of the respondent's practice, movement within and across states, and USFMG location in shortage/nonshortage areas. In addition to review of the study findings, literature reviews on specialty choice and practice location and information on the study methodology are provided. Additional contents include: a bibliography, a questionnaire, an executive summary, and a condensed nontechnical version of this study report. (SW)

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STUDY OF FUNCTIONING AND LOCATION OF U.S. CITIZEN FOREIGN MEDICAL GRADUATES WITHIN THE U.S. MEDICAL CARE SYSTEM

Final Report
Volume I

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Ester G. Smith
Project Director

EXECUTIVE SUMMARY

Study of the Functioning and Location of U.S. Citizen Foreign Medical Graduates Within the U.S. Medical Care System

Study Objectives

American citizens who received their medical education in foreign countries (USFMGs) have emerged in the last decade as a growing health manpower resource. Until recently, research studies and statistical data either ignored the USFMG population because of their relatively small numbers or grouped them together with foreign medical graduates (FMGs). This project constitutes the first comprehensive study of USFMGs who have been successfully integrated into the U.S. medical care delivery system.

The study examined USFMG entry into the U.S. medical care system through the conceptual development of a 'medical education and practice continuum'. The medical education and practice continuum delineated paths and options available to USFMGs from the time of their entry into a foreign medical school through their choice of specialty and practice location. By examining the movement of USFMGs along this continuum and documenting the paths chosen by them, the study accomplished its two major objectives:

- to develop a profile of USFMGs from the point of entry to foreign medical school through their selection of a specialty and their establishment of a medical practice
- to identify, through the development of decision models and using multinomial logit techniques, the variables that determine USFMGs' choice of specialty and practice location.

Methodology

To achieve these objectives, we selected a sample of 1,000 USFMGs who had graduated from foreign medical schools between 1970 and 1979. The sample, selected from the AMA Physician Masterfile, was stratified by year of graduation and by resident/practicing physician status.

Data were collected from July to September of 1982, via two mailings and a telephone follow-up of all non-respondents. Of the survey sample of 1,000 USFMGs, only 771 had valid addresses. Of this group, responses were obtained from 463 USFMGs (60.1%): 112 residents and 351 practicing physicians.

The USFMG Profile: Characteristics, Experiences, and Path Choices Along the Medical Education and Practice Continuum

Socio-Economic Characteristics: Nearly all surveyed USFMGs were male and Caucasian. Most were brought up in the Northeastern United States in communities ranging widely in size. USFMGs' parents were well educated; one fifth had physician fathers. USFMGs attended private colleges more often than state colleges and majored, in most cases, in biological sciences.

Foreign Medical Education: USFMGs graduated from college at an average age of 22.5 and entered medical school 1.5 years later, at an average age of 24. The surveyed USFMGs studied in a large number of schools located in 24 countries. Most studied in Mexico, Italy, or Western Europe. The most commonly attended schools were the University of Guadalajara in Mexico, and the Universities of Bologna and Rome in Italy. On the average, it took USFMGs five years to complete medical school; most performed well academically.

To finance their foreign medical education, USFMGs used multiple sources of financial assistance. Nearly all USFMGs were financially assisted by their parents. Over one-half used their personal savings. Approximately 20 to 30 percent also received state or federal financial aid. USFMGs who grew up in rural communities were more likely to obtain federal financial aid than USFMGs who grew up in urban or suburban areas. U.S. federal financial aid was also more frequently provided to USFMGs who attended Mexican medical schools and to USFMGs in primary care and "other" specialties. After completing their medical education, recipients of U.S. federal financial aid tended to locate their initial practice in rural or suburban communities, rather than in urban communities.

USFMG satisfaction with the medical education they had received varied by country of medical school. Overall, USFMGs who studied in Western Europe were most highly satisfied with all components of their medical education. USFMGs who studied in Mexico were least satisfied with their schools' facilities, equipment, faculty, curriculum, and clinical training. Among these components, USFMGs were least satisfied with the quality and quantity of clinical training they had received. To supplement the clinical training provided by the foreign medical schools, a majority participated in self-arranged, clinical training programs in U.S. hospitals while they attended foreign medical schools.

Coordinated Transfer Application System (COTRANS): At this point on the medical education and practice continuum, two paths are available to U.S. citizens who study medicine abroad. They can either complete their medical education in the foreign country, or attempt to transfer with advanced standing to a U.S. medical school, via COTRANS.

USFMGs' degree of dissatisfaction with their foreign medical education was related to their attempts to transfer with advanced standing into a U.S. medical school. Significantly more USFMGs who studied in Mexico tried to transfer than from any other country. Overall, about one-third of surveyed USFMGs attempted to transfer. Only a few were accepted, but even they decided to complete their medical education abroad.

Fifth Pathway Program: The Fifth Pathway program provides an alternative way for USFMGs to enter the American medical system. This program, established in 1970, was available to USFMGs who studied medicine in schools that require a year of internship or social services before granting the medical degree. The program provides a year of supervised undergraduate clinical training in the United States.

Over one-half of the USFMGs participated in the program, including the majority of those who studied in Mexico.

The ECFMG Examination: USFMGs are required to take the ECFMG examination in order to enter a graduate medical training program in the United States. Nearly all surveyed USFMGs took the ECFMG examination and obtained their graduate medical training in the United States. However, the USFMG scores on the ECFMG examination averaged only marginally above the score required for passage, and one-third of the USFMGs had to repeat the examination.

Graduate Medical Training: USFMGs participated in a large number of graduate medical training programs distributed across the United States. The largest group of USFMGs--one-third--participated in graduate training programs located in New York State. Only one-half of the USFMGs chose their graduate medical training program through the National Resident Matching Program. Generally, USFMGs made their own program arrangements.

During their graduate medical training, USFMGs encountered a variety of problems, which they attributed to their foreign medical education and to their USFMG status. Attitudinal problems were most prevalent. USFMGs complained about the attitudes of faculty toward them. USFMGs also encountered difficulties in performing general hospital duties--a reflection of deficiencies in the clinical training they had received in their foreign medical school--and felt that their knowledge of basic medical sciences was lacking.

Negative faculty attitudes were experienced by USFMGs regardless of the country in which they had received their medical education. However, USFMGs who studied medicine in Mexican schools experienced more difficulty, due to the gaps in their knowledge of basic medical sciences. USFMGs who graduated from Italian or West European schools found the performance of general hospital duties their major area of difficulty.

Licensure: Before they can practice medicine, USFMGs (like all U.S. physicians) are required to take the Federation Licensing Examination (FLEX). Nearly all surveyed USFMGs were licensed. The largest group of USFMGs was licensed to practice medicine in New York State.

Specialty Choice: During their graduate medical training, the surveyed USFMGs chose 26 areas of specialization. Most often USFMGs chose to specialize in internal medicine, family medicine, general surgery, pediatrics, diagnostic and therapeutic radiology, and psychiatry. Primary-care specialties were most prevalent (selected by two-thirds of USFMGs). Over one-tenth of the USFMGs chose surgical specialties, and fewer than one-tenth selected hospital-based specialties.

In selecting their specialty, USFMGs were most often motivated by the "attributes" of the specialty. Attributes considered most important were: the patient contact associated with a specialty and the encouragement USFMGs received from others who trained in the specialty. These factors also appeared to be important for USFMGs in each of the four specialty categories. The demand for a specialty and the income potential associated with a specialty were not perceived as important factors in specialty choice.

Specialty Board Certification: All physicians find that specialty board certification is a slow process, although an increasing number of them recognize it as necessary. Over one-half of the USFMG practicing physicians were specialty board certified. Most USFMGs had been certified in the four years prior to this study. Primary-care physicians tended to be specialty board certified more often than physicians with surgical and hospital-based specialties.

USFMG Practice Location: USFMG practice locations were divided into three categories: initial practice location (practice location upon completion of graduate medical training), current practice location, and intermediate practice locations (practice locations selected between initial location and current location). Since the majority of USFMGs have not changed their practice location, most of the analysis focused on initial practice and location characteristics.

After completing their graduate medical training, USFMGs located their practice all over the country (in 40 states). Most frequently, USFMGs located their initial practice in New York, California, or New Jersey. Most USFMGs chose to practice in small- to medium-sized communities. Nearly 50% of the USFMGs practiced in urban areas; nearly 40% had suburban practices; and approximately 20% established practice in rural areas.

Characteristics of Initial Practice: USFMGs have been in their initial practice from 1 to 11 years. On the average, they have maintained their initial practice for 2.35 years. Since most of the USFMGs who graduated from foreign medical schools between 1970 and 1979 have been in practice for a relatively short time, the majority were still in their initial practice phase.

Most USFMGs were in patient-care practice and maintained an office-based practice. Approximately one-third had a hospital-based practice. USFMGs not involved in patient-care were divided among medical teaching, research, and administration.

USFMG practicing physicians had an average annual income of $63,833. Those practicing in rural communities reported the highest annual income; those practicing in suburban communities reported the lowest average annual income. USFMGs' annual income also varied, as expected, by specialty categories. USFMGs in surgical specialties had significantly higher annual incomes than USFMGs in any of the other three specialty categories. The second highest annual income was reported by USFMGs in hospital-based specialties, followed by primary-care physicians, and USFMGs in the "other" specialties category.

Characteristics of Current Practice: Only a small group of USFMGs (n=60) relocated their practice. Most practice relocations took place in the three years prior to this study. USFMGs relocated their practice in 20 states, in communities whose size and urban/suburban/rural characteristics resembled those of the communities in which their initial practice had been located.

USFMGs decided to relocate their practice mostly as a result of emerging professional opportunities and the income potential associated with these opportunities. USFMGs who relocated their practice were mostly in patient-care and had an office-based practice. One-third of this group were hospital-based.

The overwhelming majority of USFMGs had only one practice since completing their graduate medical education. Only 60 USFMGs had relocated their practice once, and only 11 USFMGs had relocated their practice twice or more.

Resident Location and Practice Plans: Residents' practice location plans varied greatly. About two-fifths of the residents were uncertain about their future practice location. About one-quarter planned to locate in a different state than the state in which they had received their graduate medical education, and about one-third planned to locate their practice in the same state. Decisions about their practice location were most frequently based on a mix of familial and professional considerations, including: educational opportunities for children, availability of hospital appointments, openings in specialty, and cultural and social opportunities available in the area. As with USFMG practicing physicians, previous familiarity with an area (due to growing up, attending college, or doing military service there) was the least important practice location determinant.

As with USFMG practicing physicians, most residents chose patient care, office-based types of practice.

Professional Activities: To determine the choices of professional activities, and the extent to which USFMGs engage in them, sampled USFMGs were asked about academic appointments, scholarly publications, and presentations at conferences. The resulting data demonstrated a considerable level of such professional activities. For instance, 45% of the USFMG practicing physicians have had academic appointments since they completed their graduate medical training. Nearly 25% have published scholarly articles, and 41% have given presentations in medical conferences. Of those who presented in medical conferences, 62% made between one and three presentations.

Despite difficulties encountered by USFMGs upon their return to the United States to undertake graduate medical training, and at the start of their medical career, the majority of USFMGs expressed satisfaction with their career. Over 80% of the practicing physicians were either "very satisfied" or "satisfied" with their selection of a graduate training program, their specialty choice, practice location, the type of practice they selected, and their overall professional development. Only about 5% expressed dissatisfaction with the above components of their career.

Specialty Choice Analysis

In addition to the specialty choice profile developed for USFMGs of motivating factors in specialty choice (i.e., the patient contact and intellectual stimulation provided by a specialty), further specialty choice analyses were conducted. These analyses focused on the relationships between specialty choice and practice location characteristics, and between specialty choice and other relevant variables.

Medical Specialty and Practice Location Characteristics: Medical specialty differentiated little among initial practice type and practice location characteristics. USFMGs in all specialty categories tended to locate their initial practice in communities ranging widely in size, type (urban, suburban, rural), and geographic region. Office-based practice was, as expected, most typical of the primary-care physician. Solo practice was most prevalent among physicians in the "other" specialty category, and a two-person partnership was most common among physicians in surgical specialties. USFMGs in the hospital-based specialties tended to engage in non-patient medical activities (such as teaching and research) more frequently than USFMGs in the other three specialty categories.

Physicians in hospital based and "other" specialties tended to have patients with lower socio-economic characteristics and minority background more often than physicians in the primary-care and surgical specialties.

Fewer than one-fifth of the USFMG practicing physicians changed their practice location. Physicians in primary-care specialties tended to relocate more frequently than physicians in the other three specialty categories.

Multivariate Analysis of Specialty Choice: The respondents' specialty choices were also analyzed using multivariate analysis, which evaluated the relative influence of a number of factors on whether a USFMG entered a primary-care specialty. The results indicate that specialty choice could not readily be predicted by the personal and environmental characteristics included in the model, such as academic ability and medical school location. Only one characteristic--an indicator of whether the respondent's father was also a physician--proved to be significantly associated with specialty choice. USFMGs with physician fathers were, on average, less likely to choose primary-care specialties. It must be inferred that other unmeasured factors must explain specialty choice.

Practice Location Analysis

As with USFMGs' specialty choice, practice location data were subjected to multiple analyses. These analyses focused on location determinants, state and regional movements of USFMGs, community types (urban/suburban/rural) in which USFMGs were likely to locate their practice, and the relationship between practice location and other relevant variables.

Factors Involved in Practice Location Choice: USFMGs were asked to identify the "important" or "very important" factors in their practice location choice. Five types of practice location choice factors were identified:

- professional opportunities available in the area
- community characteristics
- familial considerations
- personal preferences
- USFMG familiarity with the area and community.

Factors relating to the professional opportunities offered by the area were reported as most important in USFMGs' practice location decisions. These factors also emerged as most important in determining USFMG practice location choice. USFMGs regarded the following factors as important.

- availability of clinical support facilities and personnel
- opportunities for regular contact with other physicians
- access to continuing medical education
- the opportunity to join a desirable practice.

The last factor--the opportunity to join a desirable practice--was also identified most frequently as the single most important factor in practice location choice.

Other factors that one-half or more of the surveyed USFMG practicing physicians regarded as important were a mix of personal preferences, familial, and community factors. These factors included:

- preference for urban, suburban, or rural living
- quality of the local education system for children
- opportunities for social life
- climate or geographic features of area
- income potential.

Factors that USFMGs considered of least importance in their practice location choice related to USFMG familiarity with the area. Other factors considered of marginal importance were the availability of loans, community efforts to recruit physicians, and prospects of being influential in community affairs.

State and Regional Location Analysis: The state and regional location analyses were conducted for all surveyed USFMGs, as well as separately for residents and practicing physicians. To track USFMGs' state and regional history, data were collected about their residence during various milestones in their lives. USFMGs were asked to identify the state in which:

- they had lived for the longest period before they went to college
- they went to college or university
- they received clinical training while they were students in a foreign medical school
- they received clinical training as part of their participation in the Fifth Pathway program
- they received graduate medical training
- they set up their initial practice location
- they set up their current practice location, if different from initial practice location.

Approximately one-half of the surveyed USFMGs remained in their home state throughout their education and training process. USFMGs tended to attend college, receive clinical training while in foreign medical school, participate in Fifth Pathway programs, and obtain their graduate medical training in their home state. The location of the clinical training program during foreign medical school and the location of the Fifth Pathway program most frequently accounted for USFMG choice of graduate medical training programs. USFMGs tended to select graduate medical training programs located in the same state in which they had received clinical training.

The location of the graduate medical training program most commonly determined initial practice location. USFMG practicing physicians whose current practice location differed from their initial practice location tended in all cases to relocate their practice in the state in which they had received clinical training while still students in foreign medical schools. For two-thirds of these practicing physicians, current practice location was in the same state as their initial practice.

Similar results were obtained in the regional location analyses. The regional analysis was based on the hypothesis that a large proportion of USFMGs would tend to stay in the same geographic region throughout their education, training and practice. This hypothesis was confirmed in all regional analyses: approximately 10% of the USFMGs who did not stay in their home state remained in the same geographic region. The home region, the region in which USFMGs received clinical training during their foreign medical curriculum, and the Fifth Pathway program region accounted for the regional location of over 70% of all surveyed USFMGs, and USFMG practicing physicians.

The regional location of USFMGs' graduate medical training program accounted most often for the (regional) initial practice location chosen by USFMG practicing physicians. However, given the fact that home region was most strongly associated with the regional location of USFMGs' graduate medical training program, over one-half of the practicing physicians located their initial practice in their home region. Current practice location (if different from initial location) was most closely associated with the region in which USFMGs participated in clinical training while in foreign medical school and in Fifth Pathway programs.

Urban, Suburban, Rural Practice Locations: The purpose of the urban, suburban, and rural practice location analysis was to determine the extent to which USFMGs tended to locate their practice in types of communities familiar to them.

USFMGs grew up mostly in urban and suburban communities. Only one-tenth grew up in rural areas. The distribution of the types of communities in which USFMGs located their initial practice was different, to some extent, from the distribution of USFMGs' home communities. The number of USFMGs who located their initial practice in rural areas was larger than the number who grew up in such areas. In fact, over one-tenth of the physicians who were raised in urban and suburban communities established their initial practice in rural communities. On the other hand, USFMGs who grew up in rural areas were as likely to locate their practice in rural areas as in urban or suburban areas. Overall, more than one-half of the physicians in each of the three groups tended to locate their initial practice in the same type of community in which they had grown up.

The specialty distribution of USFMGs located in urban, suburban, and rural communities varied somewhat, although a mix of all specialty categories was present in each community type. USFMGs in primary-care specialties were concentrated in a larger proportion in suburban communities, while USFMGs with surgical specialties were more likely to locate in rural and urban communities.

This specialty-mix distribution was further reflected in the types of practice maintained by USFMGs located in the three types of communities. Physicians with practices in suburban and rural areas tended to have office-based practices more than physicians in urban centers. USFMGs with practices in urban areas were more than twice as likely to establish a hospital-based practice than suburban or rural USFMG physicians; they also tended to engage more frequently in non-patient care activities.

Of the various office-based types of practice, solo practices were more prevalent in rural areas and partnerships were more frequently reported by suburban physicians. Group practices were reported twice as often by suburban and rural physicians as by urban physicians.

USFMGs with practices in urban, suburban and rural communities differed, to some extent, in terms of age, family size, and parent's occupation. Physicians located in urban areas tended not to have children, were more likely to have physician fathers, and were older, on the average, when they established their initial practice. Physicians in rural areas tended to be younger, on the average, to be married, and to have children. Rural physicians also exhibited the shortest initial practice duration, compared with urban and suburban USFMG physicians. Nearly all USFMG physicians, regardless of the type of community they chose, had unlimted, full licenses. Rural physicians were as likely as urban physicians to be specialty board certified.

Physicians located in urban and suburban areas were more likely to establish their initial practice in the same state in which they participated in a graduate medical education program than were physicians who established their initial practice in rural areas. Over one-half of the physicians with urban and suburban practices located their initial practice in their home state. USFMGs with rural practices were more likely to locate their initial practice in a state different from their home state, college state, or graduate medical training state.

The three groups of physicians also differed in terms of their location determinants. USFMGs who chose to establish their initial practice in an urban area reported that professional factors were most important in their location decision. USFMGs whose initial practice was located in suburban areas identified a mix of professional, familial, and personal preference factors. Rural USFMG practicing physicians put more emphasis on familial and social factors than on professional, career-related factors. Of the five factors perceived as important location determinants by USFMGs with rural practices, only one factor was career-related: "availability of clinical support facilities and personnel." The opportunity to join a desirable practice, however, was identified by all USFMG practicing physicians--rural, suburban, or urban--as the most important location determinant.

Multivariate Analysis of Practice Location Choice: Multivariate analysis was also used to evaluate the influence of several types of factors on the respondents' location decisions. Two outcomes were analyzed. The first was the type of community in which the initial practice was located (i.e., urban, suburban, or rural). The second was whether the USFMG located his/her practice in a county with a shortage area. Factors such as type of home community and characteristics of the medical education were taken into account. The results indicated that the type of home community was a significant predictor of the type of community in which the USFMG would practice, in that practice locations were more likely to be similar in character to the physician's home community. Specialty was also a significant determinant, since primary-care physicians were more likely to locate in non-urban areas. Finally, graduates of Mexican medical schools and those who received government financial assistance were less likely to locate in urban areas.

Practice in a county with a shortage area proved to be as difficult to predict as specialty choice. Most of the factors included in the analysis proved to have no effect on this type of location decision. There was, however, some limited evidence to indicate that USFMGs who came from rural communities and who received government financial aid were more likely to practice in or near a shortage area, while graduates of Mexican schools receiving such aid were less likely to do so.

Conclusions

While the results of this study are preliminary, they do provide a basis for guiding future research and policy development.

Within a research context, this study has identified a series of variables that significantly affect USFMG specialty choice and practice location characteristics. Such variables as sources of financial aid used by USFMGs to finance their foreign medical education, USFMGs' performance in graduate medical training programs, and USFMGs' tendency to remain in their home state for their educational and professional milestones, need to be explored in greater depth.

Of particular research and policy relevance are USFMGs who have established practice in shortage areas, or who have chosen primary-care specialties. The sampling methodology used in this study limited the exploration of these USFMG subpopulations. Future research methodology should be targetted to these subpopulations.

Finally, to determine the status of USFMGs and their contribution to the U.S. medical care delivery system, the USFMG population must be examined within a comparative context. Comparisons of USFMGs with U.S. trained physicians (USMGs) will be critical in refining the USFMG profile and in determining their specialty choice and practice location characteristics.

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CHAPTER I. OVERVIEW

Within the population of American physicians, U.S. citizens who received their medical education abroad (USFMGs) have emerged in the last decade as a growing health manpower source. The increasing presence of this group of physicians has raised numerous policy and research questions. The framework for addressing these questions is set forth in this chapter.

1.0 Trends in Federal Policies Regarding the Supply of Medical Personnel

Over the past 20 years, federal policies have undergone a rather dramatic transformation with respect to medical personnel. During the middle and late 1960s, the prevailing sentiment at the federal level was that existing numbers of medical personnel were insufficient to assure access to medical care for all segments of American society. In response to this perceived need, Congress enacted a series of legislative measures--such as the 1963 Health Professions Educational Assistance Act and the 1968 Health Manpower Act--aimed at enhancing the nation's supply of medical personnel.

By the mid-1970s, it became clear that the supply of health personnel, especially in terms of physicians, had been substantially increased. Partly as a result of government policies encouraging growth in the nation's capacity to train physicians, the number of physicians practicing in the U.S. rose by nearly 25 percent between 1963 and 1973. Despite this rapid growth in aggregate stocks of physicians, serious local and regional shortages of physicians persisted into the late 1970s. In addition, the trend toward physician specialization had resulted in an imbalance between the supplies of primary-care physicians and specialists.

Recognizing the twin issues of geographic maldistribution and inadequate supplies of primary-care physicians, Congress drafted new legislation aimed specifically at these problems. The Health Professions Educational Assistance Act of 1976 (PL 94-484) was designed expressly to increase the nation's supply of primary-care physicians (especially in family practice, internal medicine, and general pediatrics), and to address the problem of geographic maldistribution. The supply was to be increased via construction grants and capitation payments to medical schools, as well as through various student assistant programs. Maldistribution was to be addressed through financial incentive programs, which were offered to medical students who agreed to practice for certain periods of time in designated health manpower shortage areas. As Weisfeld (1980) notes, (1) the Health Professions Educational Assistance Act (HPEAA) was also designed to restrict growth in the supply of physician-specialists through--among other policies--limitations on the entry of foreign physicians into the U.S. medical care system. Simultaneously, components of the HPEAA made it easier for U.S. citizens studying medicine abroad to transfer to U.S. medical schools.

There is evidence to suggest that the HPEAA has been an important force in altering the specialty distribution of physicians practicing in the U.S. In particular, data from the AMA publication Physician Distribution and Medical Licensure in the U.S., 1979 show that the stock of physicians specializing in internal medicine and pediatrics grew substantially between 1976 and 1979. This increase was substantial both in absolute numbers and in terms of the fraction of the total universe of physicians represented by these two specialties. Over the same time span, the aggregate stock of physicians in surgical specialties grew much more slowly and actually represented a smaller fraction of the universe of practicing physicians in 1979 than in 1976.

While evidence does support the contention that federal initiatives have had the desired effect upon aggregate supplies of particular physician specialties in the U.S. since 1976, little is known about the effects of such policies upon the number of USFMGs entering the mainstream of the American medical care system.

Little systematic information is available on the characteristics of the educational experiences of USFMGs, their practice location, or their medical practices. Yet USFMGs have become an increasingly important class of physicians. These issues are addressed in this study, using the framework of eight key questions:

1. What are the socioeconomic backgrounds of USFMGs?
2. What are the characteristics of the foreign medical educational experiences of USFMGs?
3. For those USFMGs who received graduate medical training in U.S. hospitals, what are the characteristics of these residency programs and what are the experiences of USFMGs in these residency programs?
4. What are the characteristics of the practices of USFMGs in terms of specialty, practice organization, functioning, and population served?
5. Where do USFMGs locate their practices, and have USFMGs shifted their practice locations over time?
6. What are the career plans of USFMGs, and have they been realized?

7. What are the interrelationships between USFMGs' practice specialties--primary care, surgical, hospital-based and other specialties--and their medical education, socioeconomic background, and other factors that affect their choice of specialty?

8. What are the interrelationships between USFMGs' choices of practice location and function (e.g., patient care, administration, teaching, research), and factors such as socioeconomic background, medical training experience, and other variables affecting these choices?

The conceptual framework used in this study to address the above issues in a systematic and comprehensive manner is the medical education and practice continuum.

1.1 The Medical Education and Practice Continuum

Over the past decade, the aggregate supply of physicians nationwide has been the focus of much research and analysis. At the same time, one group of physicians--U.S. citizens who obtained their undergraduate medical education in foreign countries (USFMGs)--has been the subject of relatively heated debate and controversy in health services literature. This controversy, in the main, centers on the allegedly uneven quality of the medical education received by some USFMGs abroad, and the implication of this allegation for the expected performance of USFMGs in stateside practice.

While debate continues regarding the quality of care we can expect from USFMGs, surprisingly little attention has been directed toward developing baseline data on USFMGs who succeed in entering the U.S. medical care system. Even though data on the aggregate supply of USFMGs in the United States are sketchy, the available evidence suggests that foreign medical schools are becoming an increasingly important training ground for U.S. citizens seeking medical degrees. Stimmel and Beneson (1978)(2) recently estimated that the number of Americans studying abroad reached 6,000 in 1978, a substantial increase over the estimated 2,800 Americans studying medicine in foreign schools a decade earlier.

This increase in the number of American nationals attending foreign medical schools should not be taken as prima facie evidence that the road from foreign training to medical practice in the U.S. is an easy one. Indeed, the road--defined in this report as the medical education and practice continuum--is long and complex.

The medical education and practice continuum is schematically represented in Figure I. American nationals who initiate medical training overseas can enter the mainstream of American medicine at any of three points in their medical education and training.

- They can transfer to an American medical school after one or two years of medical education overseas. Several avenues are available to them at this phase of their medical education. Students wishing to transfer must pass Part I of the National Board of Medical Examiners (NBME) examination.* In the last decade, these students have also been assisted by the Coordinated Transfer Application System (COTRANS) program. Since transfer students will ultimately be graduates of American undergraduate medical schools, they are not included in the universe of U.S. citizen foreign medical graduates (USFMGs).

- They can enter a graduate medical training program in the United States after completing their foreign medical education, or after completing at least the formal course work required for the medical degree. A prerequisite for the admission of a USFMG to an American graduate medical training program is certification by the Education Commission for Foreign Medical Graduates (ECFMG). This certification requirement, may, however, be waived if the student elects to enter the American medical care system via the Fifth Pathway program. This program allows eligible students to spend a year of supervised clinical training in a U.S. medical school.

- They can start practicing medicine in the United States after completing their medical education and graduate training abroad and meeting the U.S. medical licensure requirements. Such requirements include passing the Federation Licensure Examination (FLEX) and obtaining a state license.

The establishment of a medical practice subsequent to the completion of graduate medical training constitutes the endpoint of the medical education and practice continuum framework developed in this study. Included at this point of the continuum are the initial, intermediate, and current practices of USFMGs, as well as actions on the part of an increasing number of physicians to become specialty board certified.

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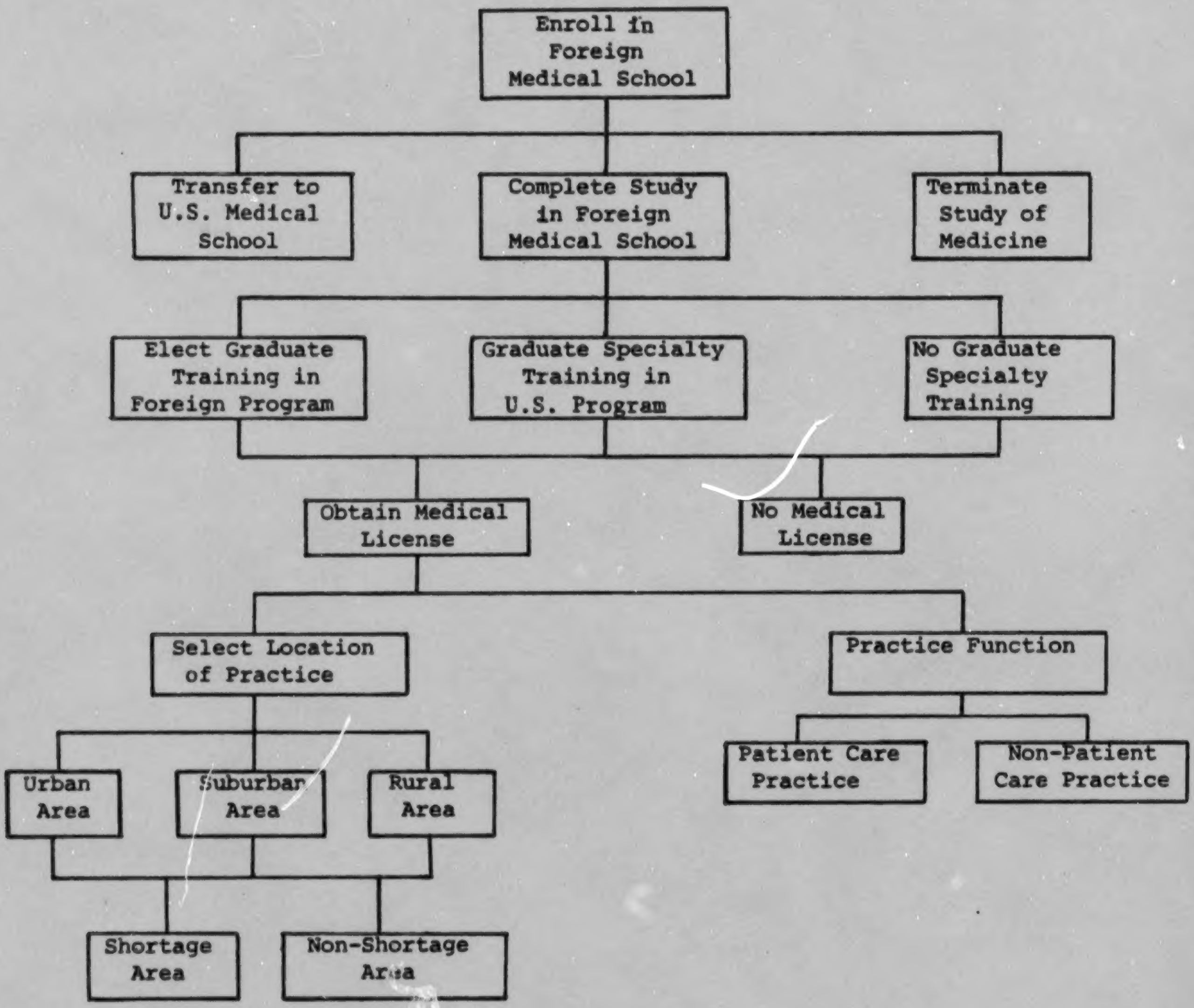
* The NBME Part I examination was replaced in June of 1980 by the Medical Science Knowledge Profile (MSKP).

FIGURE I

Medical Education and Practice Continuum
of U.S. Citizen Foreign Medical Graduates (USFMGs)


Enroll in Foreign Medical School
Transfer to U.S. Medical School
Complete Study in Foreign Medical School
Terminate Study of Medicine
Elect Graduate Training in Foreign Program
Graduate Specialty Training in U.S. Program
No Graduate Specialty Training
Obtain Medical License
No Medical License
Select Location of Practice
Practice Function
Urban Area
Suburban Area
Rural Area
Patient Care Practice
Non-Patient Care Practice
Shortage Area
Non-Shortage Area

Within the scope of this project, the following definitions were utilized:

- Specialty. Specialties were classified into four categories: primary care, surgical, hospital-based, and "other."
- Practice organization. Two major categories were used to describe practice organization: solo practice and group practice.
- Functioning. The concept of functioning included two major categories: patient care and non-patient care (i.e., administration, teaching, research).
- Practicing physicians. USFMGs who have completed their graduate medical training and who have established a patient-care or non-patient-care practice.
- Practice location. Physician practice location was defined as urban, suburban, or rural, and as located in counties with shortage or non-shortage areas.*
- Initial practice. The practice established by physicians subsequent to their completion of graduate medical training.
- Intermediate practice. The practice(s) maintained by physicians subsequent to their initial practice, but preceding their current practice.
- Current practice. The practice maintained by physicians at present, if different from initial practice.

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*The definition of shortage/non-shortage areas used in this study is identical to the definition provided in the Federal Register, May 8, 1981.

Chapter I: Footnotes

1. Weisfeld, Neil, "Regulatory Perspectives on National Problems Involving Graduate Medical Education," Graduate Medical Education Present and Perspective, The Josiah Macy, Jr. Foundation, New York, 1980, pp. 148-184.

2. Stimmel, Barry and Beneson, Thea Fuchs, "United States Citizens in Foreign Medical Schools and the Future Supply of Physicians," New England Journal of Medicine, 300(25):1414-1417, June 21, 1979.

CHAPTER II. STUDY METHODOLOGY: DESIGN AND IMPLEMENTATION

This chapter consists of six sections. The first three sections describe the major design activities of the study: sampling, instrument construction, and design pre-test. The fourth section presents the implementation of the USFMG survey. The problems encountered in the survey implementation and the limitations of the data collected are examined in the last three sections.

2.0 Sample Selection

The sampling plan developed for this study was based on aggregate data provided by the American Medical Association (AMA) on the universe of USFMGs who graduated from foreign medical schools between 1970 and 1979. According to these data, 4,816 USFMGs graduated from medical schools during the 1970-79 period. The annual distribution of USFMGs is presented in Table II-1.

Table II-I

Distribution of USFMGs, by Year of Graduation

Year of Graduation	No. of USFMGs	% of USFMGs
1970	309	6.4%
1971	365	7.6
1972	420	8.7
1973	338	7.0
1974	467	9.7
1975	695	14.4
1976	698	14.5
1977	693	14.4
1978	573	11.9
1979	258	5.4
Total	4,816	100.0

As indicated in this table, the number of USFMGs who graduated in each of these years was "sufficiently" large, although the numbers of USFMGs who graduated in the years 1975 through 1978 were significantly larger than the numbers of USFMGs who graduated in the years 1970 through 1974, and in 1979.

Of this universe of 4,816 USFMGs, the AMA did not have addresses for 21 (.43%) USFMGs; 22 (.45%) USFMGs currently practice abroad. For the purposes of this study, these two groups were excluded, thus decreasing the size of the USFMG universe to 4,773. The universe of USFMGs from which the sample was subsequently drawn was further decreased by excluding "not classified" USFMGs from the sample. The category of "not classified" encompasses USFMGs who have not responded to previous AMA surveys. This category was excluded from the sample since the pre-test (described in detail in Section 2.2) demonstrated that this group of USFMGs was unlikely to respond to this survey.

The other nine categories of USFMGs, presented in Table II-2, were classified for the purposes of this study into two large categories: interns/residents and practicing physicians.

Table II-2

Distribution of USFMGs, by Medical Status and Function

	Specialty	No. of USFMGs	% of USFMGs
I.	Interns/Residents	1,929	100.0%
	Interns	68	3.5
	Residents	1,861	96.5
II.	Practicing Physicians	2,844	100.0%
	Administrators	21	0.7
	Medical Teachers	24	0.8
	Researchers	179	6.3
	Hospital-Based Practitioners	363	12.7
	Office-Based Practitioners	1,660	58.4
	Inactive	15	0.5
	Other	14	0.5
	Not Classified*	568	20.0**

The two major classifications of USFMGs shown above, interns/residents and physicians, were used for sample selection, with an independent sample drawn from each. These two groups were treated separately because the intern/resident population could provide only limited data on practice location and function. However, the inclusion of the sample of interns/residents provides additional information on USFMGs' background, academic performance, foreign medical school attendance, graduate medical training experience, specialty choice, and plans for practice location.

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*This table assumes the inclusion of "not classified" USFMGs.

**Not classified USFMGs include 11.9% of the total universe of USFMG interns/residents and practicing physicians.

Of the total sample of 1,000 USFMGs, 850 USFMGs who were practicing physicians (of non-intern/resident status) and 150 USFMGs who were interns/residents (of non-practicing physician status) were selected. Each of these subsamples were stratified by year of graduation from foreign medical school. The size of each "year of graduation" sample stratum was proportional to its size in the respective universe of USFMGs.

The sample of 150 USFMGs who graduated from foreign medical schools between 1970-1979, and who are currently either interns or residents,* was selected using the following step-by-step procedures:

1. In the universe of 1,929 USFMG interns and residents, the percent of each "year of graduation" stratum was determined.
2. The sample size of each stratum was calculated next.
3. USFMG interns and residents were subsequently selected at random within each stratum, as demonstrated in Table II.3.

To select the sample of 850 USFMGs who are currently practicing physicians, all USFMGs who graduated from foreign medical schools between 1970 and 1979 (excluding interns, residents, USFMGs whose address was unknown, or who were practicing abroad) were aggregated into a single group, defined as the "USFMG practicing physician universe." The USFMG practicing physician sample was selected in a similar manner.

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*For shorthand convenience, the intern/resident USFMGs are referred to throughout this report as residents only.

Table II-3

USFMG Interns/Residents and Practicing Physicians: Universe and Sample

Year of Graduation	Interns/Residents				Practicing Physicians			
	Universe		Sample		Universe		Sample	
	N	%	N	%	N	%	N	%
1970	10	.5	1	.7	296	10.4	88	10.4
1971	13	.7	1	.7	342	12.0	102	12.0
1972	20	1.0	1	.7	390	13.7	116	13.6
1973	37	1.9	3	2.0	295	10.4	88	10.4
1974	86	4.5	7	4.7	379	13.3	113	13.3
1975	213	11.0	16	10.7	477	16.8	144	16.9
1976	357	18.5	28	18.7	340	12.0	102	12.0
1977	500	25.9	40	26.7	191	6.7	57	6.7
1978	481	24.9	37	24.7	89	3.1	26	3.1
1979	212	11.0	16	10.7	45	1.6	14	1.6
TOTAL	1,929	100.0*	150	100.0*	2,844	100.0*	850	100.0*

*Totals may not add to 100 percent due to rounding.

2.1 The Development of Survey Instruments

Two instruments were developed for this study: one instrument for USFMG interns/residents and one instrument for USFMGs who have completed their graduate medical training and who are practicing medicine (i.e., practicing physicians). Both instruments were based on the medical education and practicing continuum conceptual framework.

To construct the survey instruments, the medical education and practice continuum was transformed into a matrix. The matrix included four types of information, with each type presented in a matrix column. The first column of the matrix specified seven milestones in the medical education and practice continuum. For each continuum variable, the relative importance of the variable to the study and the source from which data for each variable would be obtained were listed. The relative importance of each variable was classified as primary or secondary.* This classification was subsequently employed in shortening the survey instruments.

Two sources of data were used in the study: data contained in the AMA Physician Masterfile and survey data. The data utilized in the study are presented in matrix form, below. The survey instruments developed to obtain data from USFMG interns/residents and USFMG practicing physicians differed only in the post-graduate medical training sections. While USFMG interns/residents were asked to provide information on their post-residency location and practice plans, the survey instrument constructed for USFMG practicing physicians inquired into initial (immediately following completion of graduate medical training), intermediate, and current location and practice characteristics, as well as USFMGs' professional activities, as shown in the following table.

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*Variables classified as having primary importance were critical in answering the key study questions. Variables classified as having secondary importance were useful in supplementing such answers.

Table II-4

Survey Instruments' Context

Medical Education and Practice Continuum Milestones	Interns/ Residents	Practicing Physicians with: One Practice Location	Two Practice Locations	Three or More Practice Locations
Background Characteristics	X	X	X	X
Pre-Medical Education	X	X	X	X
Attempts to Enroll in U.S. Medical School	X	X	X	X
Foreign Medical Education				
School Selection	X	X	X	X
School Characteristics	X	X	X	X
Attempts to Transfer to U.S. Medical School	X	X	X	X
Fifth Pathway	X	X	X	X
ECFMG Examiniation	X	X	X	X
Entry into U.S. Medical Delivery System				
Graduate Medical Training	X	X	X	X
Licensure (FLEX)		X	X	X
Specialty Board Certification		X	X	X
Location and Practice				
Current Residents' Location and Practice Plans	X			
Initial Location and Practice		X	X	X
Intermediate Location and Practice				X
Current Location and Practice			X	X
Social and Professional Activities		X	X	X

Table II-5

Medical Education and Practice Continuum Matrix

CONTINUUM POINTS	VARIABLES	IMPORTANCE OF DATA		SOURCE OF DATA	
		Primary	Secondary	AMA	USFMG Survey
Background Characteristics					
	• age	X		X	
	• sex	X		X	
	• ethnic/racial background	X			X
	• pre-college: birth place		X	X	
	• pre-college: major state of residence	X			X
	• pre-college: major community of residence:				
	- community size	X			X
	- urban/rural/suburban	X			X
	• parents' educational and occupational status:				
	- highest academic degree	X			X
	- parents' occupations	X			X
	• marital status during:				
	- medical school	X			X
	- graduate medical training	X			X
	- currently	X			X
	• having children during:				
	- medical school	X			XX
	- graduate medical training	X			XX
	- currently	X			XX
Pre-Medical Education	• college/university attended:				
	- type of control (public/private)	X			X
	- state of location	X			X
	• area(s) of study	X			X
	• Grade Point Average (GPA)	X			X
	• year graduated	X			X

Table II-5 (cont.)

Medical Education and Practice Continuum Matrix

		IMPORTANCE OF DATA		SOURCE OF DATA	
CONTINUUM POINTS	VARIABLES	Primary	Secondary	AMA	USFMG Survey
Attempts to Enroll in U.S. Medical School	• MCAT				
	- year taken	X			X
	- number of times taken	X			X
	- MCAT score	X			X
	• years made attempts to gain admission to U.S. medical school	X			X
Foreign Medical Education:					
• School Selection	• applications to foreign medical schools:				
	- number of schools to which applied		X		X
	- countries where schools are located		X		X
	• acceptance to schools:				
	- number of schools accepting USFMG		X		X
	• foreign medical school attended:				
	- name	X		X	
	- location	X		X	
	• sources for financing foreign medical education		X		X

Table II-5 (cont.)

**Medical Education and Practice
Continuum Matrix**

		IMPORTANCE OF DATA		SOURCE OF DATA	
CONTINUUM POINTS	VARIABLES	Primary	Secondary	AMA	USFMG Survey
• School Characteristics	• years attended school:				
	- number of years	X		X	
	- year started	X		X	
	- year completed	X		X	
	• number of American students	X			X
	• clinical training in U.S. hospital:				
	- whether received	X			X
	- source of arrangement	X			X
	- location of hospital	X			X
	• assessment of curriculum, faculty, facilities and equipment	X			X
	• on-campus clinical facilities	X			X
• Attempts to Transfer to U.S. Medical School	• whether attempt to transfer was made	X			X
	• year of medical school in which attempt was made		X		X
	• whether USFMG was accepted for transfer by a U.S. medical school		X		X
	• why USFMG did not transfer		X		X
• Fifth Pathway	• whether USFMG participated in Fifth Pathway program	X			X
	• year of participation	X			X
	• supervising medical school	X			X
	• difficulties encountered in program that are attributable to foreign medical education		X		X

Table II-5 (cont.)

Medical Education and Practice Continuum Matrix

		IMPORTANCE OF DATA		SOURCE OF DATA	
CONTINUUM POINTS	VARIABLES	Primary	Secondary	AMA	USFMG Survey
• The ECFMG Exam	• whether taken	X			X
	• month and year exam passed	X			X
	• number of times taken	X			X
	• ECFMG passing score	X			X
Entry into U.S. Medical Delivery System:					
• Graduate Medical Training	• whether obtained	X			X
	• whether obtained in U.S. or abroad	X			X
	• participation in a U.S. graduate training program:				
	- name of hospital	X		X	
	- location of hospital	X		X	
	- year training was started	X		X	
	- year training (was/will be) completed	X		X	X
	• participation in National Resident Matching Program		X		X
	• number of graduate training programs attended		X		X
	• location (states) of programs		X		X
	• graduate training received:				
	- name and location	X			X
	• specialty(ies) of choice	X		X	
	• reasons for selecting specialty	X			X
	• change of specialty		X		X
	• difficulties encountered during training that are attributed to foreign medical education	X			X

Table II-5 (cont.)

Medical Education and Practice Continuum Matrix

		IMPORTANCE OF DATA		SOURCE OF DATA	
CONTINUUM POINTS	**VARIABLES**	**Primary**	**Secondary**	**AMA**	**USFMG Survey**
	• participation in a foreign graduate training program:				
	- location (country) of program	X		X	
	- specialty choice	X		X	
	- factors in deciding to train abroad	X			X
	- length of training program	X		X	
	- year completed training program	X		X	
	- year returned to the U.S. to practice medicine	X			X
• Licensure (FLEX)	• possession of full, unlimited state license	X		X	
	• state(s) in which licensed to practice	X		X	
	• date (year) first license was obtained	X		X	
	• state of first license	X			X
	• number of times taking FLEX	X			X
	• year FLEX first taken	X			X
	• if not yet licensed:				
	- when (month, year) planning to take FLEX	X			X
	- potential changes in location and practice as a result of licensure	X			X
Location and Practice					
• Current Residents Location and Practice Plans	• subsequent to completion of residency:				
	- planned state of location	X			X
	- type of community (urban/suburban/rural)	X			X
	- type of practice	X			X
	• perceived importance of location factors	X			X

Table II-5 (cont.)

Medical Education and Practice
Continuum Matrix

		IMPORTANCE OF DATA		SOURCE OF DATA	
CONTINUUM POINTS	VARIABLES	Primary	Secondary	AMA	USFMG Survey
• Initial Location and Practice	• changes in state and community of practice after completion of residency	X			X
	- size of community	X			X
	- type of community	X			X
	- county	X			X
	• assessed importance of location decision factors	X			X
	• type of practice	X		X*	X
	- characteristics of office-based practice	X			X
	- characteristics of hospital-based practice:				
	· type of hospital	X			X
	· ownership	X			X
	· affiliation	X			X
	· size	X			X
	• characteristics of patient population:				
	- racial/ethnic background	X			X
	- socioeconomic status	X			X
	• changes in community of practice	X			X
	• changes in type of practice	X			X
• Current Location and Practice (if different)	• current state of location	X		X	
	• when first located in state	X			X
	• size of community of practice	X			X
	• urban/suburban/rural characteristics of current community	X			X
	• assessed importance of location decision factors	X			X

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*Data on type of practice will be available from the AMA Physician Masterfile for those USFMGs whose current location is their initial location.

Table II-5 (cont.)

Medical Education and Practice Continuum Matrix

		IMPORTANCE OF DATA		SOURCE OF DATA	
CONTINUUM POINTS	VARIABLES	Primary	Secondary	AMA	USFMG Survey
	• character of current practice:				
	- office based	X			X
	- hospital-based:				
	· type of hospital	X			X
	· ownership	X			X
	· affiliation	X			X
	· size	X			X
	• patient population characteristics:				
	- ethnic/racial background	X			X
	- socioeconomic status	X			X
	• annual income	X			X
• Intermediate Location and	• number of other locations:				
	- state(s)	X			X
	- communities	X			X
Social and Professional Activities	• membership in medical association	X		X	
	• academic appointments	X			X
	• articles published	X			X
	• presentations at professional meetings	X			X
	• satisfaction with aspects of medical career path	X			X

2.2 Pre-Test

The survey instruments were pre-tested during February of 1982. The pre-test sample included nine USFMGs who had graduated from foreign medical schools between 1970 and 1979. The pre-test sample was selected from the AMA Physician Masterfile, using only one stratification criterion: "year of graduation from foreign medical school." This criterion included two cells only: "graduated from foreign medical school between 1970-1974" and "graduated post-1974." Within each of these two cells, four and five USFMGs, respectively, were selected on a random basis.

To pre-test the survey instruments, questionnaire packets were sent out to the USFMG pre-test sample. In addition to the questionnaire, the packets included a cover letter and a stamped, self-addressed return envelope. The USFMGs selected for participation in the pre-test were asked to complete the questionnaire and then discuss it in a telephone interview, in terms of its clarity, availability of data, response burden, and willingness of USFMGs to provide the requested information.

Of the nine USFMGs to whom questionnaires were mailed, three USFMGs could not be located. Questionnaire packets were subsequently sent to three comparable USFMGs, drawn from a replacement sample. This process was repeated until nine USFMGs could be located and interviewed.

At the completion of pre-test telephone interviews, several analyses were conducted. First, the quality of the AMA address information was examined. Of the 14 USFMGs to whom survey instruments were mailed, 4 USFMGs had changed their addresses and no forwarding addresses could be located for them. These 4 USFMGs were either residents or were included in the "not classified" category. To minimize the attrition rate of sampled USFMGs due to wrong or out-of-date addresses, the AMA was asked to ensure, to the extent possible, that addresses were current--especially for USFMG sampled residents.

The "not classified" USFMG issue was also addressed in the pre-test. As documented in Table II-1, 11.9 percent of USFMGs in the AMA Physician Masterfile were in the "not classified" category. This category includes physicians who had not responded to previous AMA surveys. Given the size of the "not classified" USFMG group, particular attention was paid to them during the pre-test, in order to determine how likely they were to respond during the full survey. The pre-test sample included four "not classified" USFMGs. Of the four non-classified USFMGs, two refused to be interviewed by telephone or to complete the survey instrument, and two could not be located. Consequently, "not classified" USFMGs were excluded from the main survey.

The final pre-test analysis related to the survey instruments. The instruments were reviewed on the basis of respondents' comments during the telephone interview. Two types of respondents' comments were obtained: general comments about the survey and the survey instruments, and comments about specific survey items. General comments about the survey are summarized below:

- Length of Questionnaires. Overall, pre-test participants stated that the questionnaires were too long and should be shortened. However, respondents also stated that the issues addressed in the survey instruments were relevant, of personal interest to them, and important. Two criteria were used for shortening the questionnaires: respondents' comments and recommendations regarding specific questions, and the importance of questions to the development of the specialty choice and practice location decision models. On the basis of these criteria, 15 questions were excluded from the questionnaires.

- The Recall Questions. Ability of respondents to recall specific data constituted another issue addressed by pre-test participants. All respondents reported that grade-point averages (GPAs) during college and medical studies and test scores (MCAT, ECFMG, FLEX, etc.) were difficult to recall. Respondents were confident that they could provide reliable data if they were permitted to submit a numerical range, rather than specific single scores. The questionnaires were subsequently changed to request ranges rather than specific scores.

- Confidentiality of the Data. Because of the personal nature of the study, respondents also inquired about the issue of confidentiality. As a result of these comments and questions, the cover letters were changed to highlight the multiple confidentiality safeguards that would be employed in collecting, processing, analyzing, and reporting data.

- Additional Questions. Pre-test participants also recommended--despite their comments regarding questionnaire length--that the survey instrument include questions on language training during foreign medical education, adjustment to the foreign culture, and academic performance in the foreign medical school. Given the need to shorten the survey instruments, only the recommended question on academic performance in foreign medical schools was included.

The questionnaires were revised on the basis of pre-test results and submitted for OMB clearance in March of 1982. OMB clearance was obtained on July 7, 1982.

2.3 Implementation of the USFMG Survey

Preparation for data collection was undertaken immediately following the receipt of OMB clearance. The survey preparation lasted from July 12 to July 26, 1982. Tasks included:

- printing two cover letters (one for the first mailing and one for the second mailing);
- printing the two USFMG questionnaires (a practicing physician questionnaire and an intern/resident questionnaire);
- obtaining a business reply mail permit and printing the self-addressed return envelopes;
- obtaining three sets of address labels from the AMA. Each address label included name, address, and code number information;
- preparing a Survey Log, which listed the sampled 1,000 USFMGs by code number. Recorded in the Survey Log were data concerning response/non-response for each data collection phase; and
- training Policy Analysis, Inc. (PAI) survey staff in mailing and questionnaire processing procedures.

Data were collected in three phases: two mailings and a telephone follow-up of all non-respondents. Each data collection phase was approximately three weeks long.

We began the first data collection phase (July 27 to August 15, 1982) by mailing questionnaire packets to the 1,000 USFMGs selected by the AMA according to PAI sampling specifications. Each questionnaire packet included a cover letter, a questionnaire, and a self-addressed return envelope. No personally identifying information was recorded on the questionnaire, except for a code number corresponding to the code number appearing on the address label. Approximately 20 percent of the questionnaire packets were randomly selected for spot checking, to ensure that the appropriate questionnaire was enclosed and that the appropriate code number was recorded on the questionnaire. After the first mailing, 303 completed questionnaires were returned to us. In addition, 29 questionnaire packets were returned due to wrong addresses, 2 sampled USFMGs refused to participate in the survey, and 3 sampled physicians claimed that they were misclassified, i.e., that they were not USFMGs.

In the second data collection phase (August 16 to September 6, 1982), questionnaire packets were mailed to 663 sampled USFMGs who had not responded to the first mailing. The questionnaire packets included the cover letter designed for the second mailing (urging non-respondents to the first mailing to complete the questionnaire), a copy of the questionnaire, and a self-addressed return envelope. Mailing procedures used in the first data collection phase were also employed in this phase.

At the conclusion of the second data collection phase, 100 completed questionnaires were returned. In addition, 29 questionnaire packets were returned due to incorrect address information, 3 USFMGs refused to participate in the survey, and 1 sampled physician claimed that he was misclassified--that he was not a USFMG.

In the third data collection phase (September 7 to October 1, 1982), we undertook an intensive telephone follow-up effort to increase the response rate. In the process of locating telephone numbers for non-respondents (456 USFMG practicing physicians and 74 USFMG residents), PAI survey staff discovered that telephone numbers were unavailable for 129 USFMG practicing physicians and for 36 USFMG residents (or for a total of 165 non-respondents). Telephone numbers could not be located due to a number of reasons:

- for 94 practicing physicians and 28 residents, we had the wrong address;
- for 28 practicing physicians and 5 residents, the telephone number was unlisted;
- for 7 practicing physicians and 3 residents, the telephone number had been disconnected.

Telephone calls were subsequently made to 363 non-respondents.* Of this group of non-respondents:

- 47 USFMGs (43 practicing physicians and 4 residents) expressed their refusal to participate in the survey;
- 48 USFMGs (46 practicing physicians and 2 residents) claimed that they never received the questionnaire (due to wrong address). Questionnaire packets were again mailed out to these USFMGs;

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*Two non-respondents from Hawaii were not contacted by telephone.

- 29 USFMGs promised to complete the questionnaire and return it;
- 5 USFMGs (4 practicing physicians and 1 resident) returned the questionnaire before they were contacted by telephone;
- 2 practicing physicians were never reached during the telephone follow-up phase;
- 2 practicing physicians claimed that they were misclassified--that they were not USFMGs.

At the conclusion of the telephone follow-up phase, 60 completed questionnaires were received, increasing the number of completed usable questionnaires to 463.

Completed questionnaires were then coded, keypunched, and cleaned. A data tape was created, merging data collected in the survey with AMA data on surveyed USFMGs.

2.4 Problems Encountered in Data Collection

2.4.1 Accuracy of AMA Address Information

Subsequent to the three data collection phases, 463 completed questionnaires were received. The relatively low number of responses obtained in this survey is mainly due to the large number of wrong addresses included in the AMA sample of 1,000 USFMGs. The numbers of responses obtained during each phase, overall and by physician population (residents and practicing physicians), are listed in Table II-6.

The rate (percentage) of responses, non-responses, refusals, misclassifications, and wrong address/telephone information is presented in Table II-7.

Given the significant percentage of wrong address/telephone information and misclassifications (23% of the sample), PAI believes that a more appropriate calculation of the actual response rate should be based on the total number of bona fide USFMGs with correct addresses. For the 1,000 USFMGs sampled, we had wrong address/telephone information for 223, and misclassification for 6 (i.e., they were not USFMGs). The actual sample size is thus 771, and the response rate 60.1%.

TABLE II-6

Numbers of Responses Obtained During Each Phase, by Physician Population

	First Mailing			Second Mailing			Telephone Follow-up			Overall Total		
	Practicing Phys.	Residents	Total	Practicing Phys.	Residents	Total	Practicing Phys.	Residents	Total	Practicing Phys.	Residents	Total
Sample Size	850	150	1,000	561	102	663	456	74	530	850	150	1,000
Completed Questionnaires	265	38	303	70	30	100	51	7	58	388	75	463
Refusals	2	-	2	3	-	3	43	4	47	48	4	52
Misclassified	3	-	3	1	-	1	2	-	2	6	-	6
Wrong Address/Telephone Information	19	10	29	7	22	29	129	36	165	155	68	223

TABLE II-7

Rate of Responses, Non-Responses, Refusals, Misclassifications, and Wrong Address/Telephone Information

	First Mailing			Second Mailing			Telephone Follow-up			Overall Total		
	Practicing Phys.	Residents	Total	Practicing Phys.	Residents	Total	Practicing Phys.	Residents	Total	Practicing Phys.	Residents	Total
Sample Size*	85 %	15 %	100 %	66 %	68 %	66.3%	53.6%	49.3%	53 %	85 %	15 %	100 %
Completed Questionnaires	31.2	25.3	30.3	12.5	29.4	15.1	11.2	9.5	10.9	45.4	50	46. %
Refusals	.02	-	.02	.05	-	.05	9.4	5.4	8.9	5.6	2.7	5.2
Misclassified	.04	-	.03	.02	-	.01	.4	-	.4	.7	-	.6
Wrong Address	2.2	6.7	2.9	1.2	21.6	4.4	28.3	48.6	31.1	18.2	45.3%	22.3

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*Percentages are calculated on the basis of sample size in column.

2.4.2 Attitudes of USFMGs Toward Participation in the Survey

Comments concerning the study, the questionnaire, the U.S. medical establishment, and foreign medical education were received from both respondents and non-respondents. USFMG respondents and non-respondents differed only in their attitudes toward the study. While respondents welcomed the opportunity to take part in the study and report their experiences, non-respondents viewed the study as potentially threatening and the questionnaire as too personal.

The threatening nature of the study was perceived in the availability of USFMG data, through the survey, to health planners and policy makers for estimating the likely impact of USFMGs upon the supply of physician manpower in the U.S. in the immediate future. Several USFMGs who refused to complete the questionnaire indicated that such assessments of USFMG impact will "...close the door to those U.S. citizens who are in foreign medical schools."

Non-respondents also claimed that the types of data requested in the questionnaire were highly personal. Questions identified as "too bold" or "too personal to report" included questions dealing with grade-point averages, test scores, and income.

Non-respondents also added that their refusal to participate in the survey stems from the fact that the U.S. medical establishment did nothing to help them in their medical education and in their entry into the U.S. health care delivery system. Consequently, they do not feel any obligation to help any U.S. agency (i.e., HRA) in collecting data. This was sharply expressed as follows:

> The Division of Medicine (HRA) and other allied medical institutions did nothing to help me in my obtaining my medical education. In part, these organizations go out of their way to impede the return of American citizens who studied abroad.
>
> ...I also can't believe that you ask for my help after treating me like dirt while I was in medical school, while I attempted to transfer with passing NBME scores, especially during Fifth Pathway where I was treated like a pariah and then in residency openings and training where I met a constant undercurrent of discrimination.

Similar feelings of discontent toward the U.S. medical system were also expressed by respondents. Both respondents and non-respondents also stressed the financial and cultural difficulties they had encountered while studying abroad, difficulties that they felt are not recognized or appreciated correctly.

A major difficulty that USFMGs encounter is associated with their entry into the U.S. health care delivery system, where their qualifications and skills are continuously challenged. This problem was voiced in comments like the following:

> When I say I am a foreign graduate, the U.S. graduates look down their noses. (It will) possibly never change.
>
> ...It is the perception of many American educators and "organized" medicine (to which I belong) that USFMGs are a problem.

This perception is particularly disturbing, because USFMGs feel they are good doctors who have received a sound medical education, even though it was received abroad.

2.5 Limitations of the Study Data

To examine the implications of the response rate obtained in the USFMG survey on the planned data analyses, several comparative analyses were undertaken. The purpose of the comparative analyses was to determine:

- whether the sample of USFMG respondents was significantly different from the sample of USFMG nonrespondents;
- whether the distribution of respondents by "year of graduation from foreign medical school" (the sample stratification criterion) was significantly different from the distribution of the universe of USFMGs by year of graduation;
- whether the sample of respondents was sufficient for conducting planned data analyses;
- whether data reported by respondents (self-reporting) are significantly different from data available on USFMG performance in general.

Each of these comparative analyses is described in the following sections.

2.5.1 Non-Response Analysis

The main purpose of the non-response analysis was to determine whether USFMGs who did not respond to the survey (n = 534) were significantly different from USFMGs who completed the survey questionnaires (n = 463). The only data available for both respondents and non-respondents were AMA data concerning:

- state in which USFMG was born
- current age
- sex
- specialty
- year in which USFMG obtained a full, unlimited license
- Specialty Board Certification
- type of practice
- current state of residence
- present employment

These data, obtained from the American Medical Association Physician Masterfile, served as the basis for the non-response analysis.

On the basis of these data, USFMG respondents overall did not differ significantly from non-respondents. Both USFMG populations were widely distributed geographically. The three states from which the largest numbers of respondents and non-respondents originated were New York (29.2% of respondents, 29.8% non-respondents), New Jersey (8.1% and 8.6% respectively), and California (7.3% and 4.7%, respectively). The overwhelming majority of both groups were male (93.5% and 94.4%).

On average, USFMG respondents were somewhat younger than USFMG non-respondents: 37 years as compared with 38.6 years. Fewer than 10% of each group were born before 1940. However, more USFMG respondents (66.1%) than non-respondents (43.6%) were born after 1945. The age difference between respondents and non-respondents was statistically significant only when the two groups were divided into two age categories: younger than 35, and 35 or older.*

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*x^2 = 8.992, 1d·f·,p = .0027

Both USFMG groups had a wide variety of medical specialties. Of the specialties reported by respondents and by non-respondents, internal medicine (15.8% of respondents, 18.7% of non-respondents), family practice (14.3% and 10.9%, respectively), obstetrics/gynecology (19.6% and 8.2%, respectively), and pediatrics (10.2% and 5.6%, respectively) were selected by the largest number of USFMGs. Across both respondent and non-respondent populations, primary care constituted the major area of specialty. Forty-seven percent of the non-respondents and 43% of the respondents were in primary-care specialties. Surgical specialties and hospital-based specialties were each practiced by 8.4% to 13.2% of USFMGs in each group. Approximately one-third of the USFMGs in each group were in the "other specialties" category.

Among USFMGs in both groups who had completed their residency, nearly all had unlimited, full state licenses to practice medicine. One-fifth of the responding USFMGs were interns, as were 26% of the survey non-respondents. On the average, respondents had medical licenses for 5.52 years. Non-respondents had held such licenses for 5.24 years. Of responding USFMGs licensed to practice medicine, 81.5% received these licenses in 1977 or later. Fewer non-respondents (67.3%) received their licenses during the 1977-1981 period. (This finding was consistent with the age difference between respondents and non-respondents: respondents were younger than non-respondents.)

Despite their younger age, a significantly larger percentage of USFMG respondents were specialty board certified (31.5%) compared with USFMG non-respondents (22.3%).* Family practice and internal medicine constituted the two major areas of specialty board certification for both groups.

Currently, 5% or more of USFMG respondents and non-respondents reside in each of the following states: New York (21.8% respondents, 27.9% non-respondents), California (12.7% and 10.5%, respectively), New Jersey (11.7% and 8.9%, respectively), Florida (4.5% and 8.9%, respectively), Pennsylvania (5.2% and 6.2%, respectively), Texas (5.4% and 4.7%, respectively), and Ohio (5.0% and 4.0%, respectively).

Eighty percent of the USFMG respondents and 75% of the non-respondents are currently practicing physicians. The majority (85%) in both groups are involved in direct patient care; approximately 10% are in medical research. USFMG respondents and non-respondents exhibited similar medical practice patterns. Approximately 25% are in solo practice; 31% of the respondents and 37.4% of the non-respondents have a hospital-based practice; and 26.2% of the respondents and 17.7% of the non-respondents have a partnership or a group-practice arrangement.

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*$x^2 = 10.870$, 1d·f·, $p = .001$

2.5.2 Sample/Universe Distribution Analysis

The second comparative analysis focused on the distribution of USFMGs by year of graduation from foreign medical school. The universe of USFMGs who graduated from foreign medical schools between 1970 and 1979 was compared to the sample of USFMG respondents who graduated during that period. Comparisons were conducted for each of the 10 years of the 1970-79 period.

Table II-8 presents the percentages of USFMGs in the universe and in the sample who graduated during each year between 1970 and 1979.

As demonstrated in this table, the distribution of sampled USFMGs who responded to the survey was similar to the distribution of their counterparts in the entire USFMG population. The sample can thus be considered representative of the population in terms of this sample stratification variable.

2.5.3 Sample Cell Size Analysis

The purpose of this analysis was to determine which of the planned analyses could not be implemented due to the sample size. To carry out this assessment, planned analyses were reviewed in light of sample, subsample, and cell distribution, as well as on the basis of surveyed population variance.

For example, given the wide distribution of surveyed USFMGs across foreign countries and foreign medical schools, it became imperative to group respondents into a small number of geographic units. Since only a few USFMGs studied in each of approximately 20 countries, these USFMGs were grouped into a single geographic category of "other countries." No analyses could be conducted within this category because of the large number of cells that would be used and the minute size of these cells. Moreover, although USFMGs in the "other countries" category were compared with USFMGs who studied in Mexico, Italy, and Western Europe, the aggregation of USFMGs in the "other countries" category was employed with caution, in light of its heterogeneity.

The need to combine subsamples or cells in order to increase the cell size for analytic purposes was also evident in the multivariate analyses. The impact of this aggregation on the respective models is described in Chapter IV, Section 4.9; and Chapter V, Section 5.6.

Subsample sizes also limited the level of analysis that could be conducted on USFMGs who had changed their initial practice location. The number of USFMGs whose current practice location differed from their initial practice location was small (N=60). Given this subsample size, assessment of changes in practice location was limited to descriptive, and some comparative, analyses.

Table II-8

Comparison of USFMG Universe and Sample

Year of Graduation from Foreign Medical School	Percent of USFMGs	
	Universe	Sample
1970	6.4	8.5
1971	7.6	5.1
1972	8.7	5.4
1973	7.0	4.2
1974	9.7	11.4
1975	14.4	13.6
1976	14.5	17.6
1977	14.4	16.3
1978	11.9	10.7
1979	5.4	7.4

2.5.4 Self-Reporting as a Potential Source of Bias

The study design had incorporated strategies for the reduction or elimination of self-reporting bias. Such strategies pertained mostly to "objective data," that is, data regarding USFMG academic and professional performance measures such as grade point average, MCAT scores, ECFMG scores, and number of times USFMGs had taken medical and licensure examinations before passage. To eliminate potential self-reporting bias due to recall or reluctance to report poor performance, survey questions dealing with performance data used score ranges rather than requesting specific scores.

While study findings are generally consistent with previous research, it is important to recognize that any inconsistencies between "objective" secondary data and the data reported by survey respondents concerning their performance may be due to the "range strategy" employed in this study, to recall problems, as well as to potential self-reporting bias.

CHAPTER III. USFMG BACKGROUND AND EDUCATIONAL EXPERIENCES

This chapter describes USFMGs' paths along the medical education and practice continuum up to the point of their entry into the U.S. medical care delivery system. Included in this chapter are the following data on surveyed USFMGs:

- sociodemographic characteristics
- pre-medical educational background
- characteristics of the foreign medical education
- re-entry paths taken by USFMGs:
    - attempts to transfer to U.S. medical schools via COTRANS
    - participation in clinical training programs in U.S. hospitals during their foreign medical education program
    - participation in the Fifth Pathway program
    - USFMG experiences relating to the Education Commission for Foreign Medical Graduates (ECFMG) examination
- participation in graduate medical training programs in the United States or abroad, preceding the establishment of medical practice
- obtaining full, unlimited state licensure to practice medicine

3.0 Socio-Economic Background of USFMGs

The socio-economic characteristics exhibited by USFMGs in the sample correspond overall to the profiles of USFMGs described in previous research.

A majority of the 463 USFMGs who participated in the study grew up in the Mid-Atlantic (55%), New England (5%), and North Central (10%) portions of the country. USFMGs were almost as likely to grow up in small-to-medium sized towns (55% grew up in communities up to 250,000) as in larger cities (45%). However, one-third were brought up in large metropolitan areas with populations ranging from one million to five million (10%) or more than five million (23%).

The overwhelming majority of the USFMGs were male (93%), and Caucasian (93%). Of the 32 non-Caucasian USFMGs, 23 were Hispanic (5%), and five were of an Asian/Pacific ethnic origin.

USFMGs came from well-educated families. Sixty-two percent of the fathers of sampled USFMGs had a college education. Sixteen percent of the fathers held a bachelors degree, 9% held a masters degree, and 35% held an advanced professional degree. Of the 141 USFMGs who reported that their fathers had advanced professional degrees, 87 stated (61.7%) that their fathers were physicians.

The educational level of the mothers of USFMGs was, as expected, lower. Only 34% of the mothers had a college education. Those with a college education tended more heavily toward the bachelor (19%), or master (10%) degrees; only 5% of the mothers of surveyed USFMGs held advanced professional degrees. Indeed, the mean educational level for mothers was high school. Consistent with this finding was the reported occupational distribution of mothers of USFMGs. Over half of the mothers were exclusively housewives (57%). Of the rest, 12% were clerical workers, 7% were teachers, and 5% were sales personnel. Only two USFMGs reported that their mothers were physicians.

More USFMGs attended private colleges (59%) than state universities (41%). Areas of undergraduate studies were concentrated in biological (61%), physical (12%), nursing (2%), and pharmaceutical (2%) sciences. However, 15% of the USFMGs studied humanities and 7% identified the social sciences and other areas as their undergraduate major.

On the average, USFMGs had a 3.0 (out of 4.0) grade-point average during their undergraduate studies. They were, on the average, 22.5 years old when they completed their undergraduate studies.

To determine whether USFMG residents differed from USFMG practicing physicians in their socioeconomic characteristics, the two populations were compared. Overall, the sample of 112 residents and 351 practicing physicians did not differ significantly in their background characteristics.

Both populations were geographically well distributed. Residents grew up in 25 states and practicing physicians reported 35 states as their place of residence before attending medical school. New York (32.1%, 39%), New Jersey (18.8%, 13.8%), and California (12.5%, 11.6%) were the three states in which over 60% of USFMG residents and practicing physicians had lived longest before they attended college.

The large majority of residents (86.5%) and practicing physicians (88.7%) reported that they grew up with equal likelihood in urban or suburban communities. Nearly two-fifths in each group grew up in communities with 500,000 or more in population. The overwhelming majority in both groups were male and white.

The two major paternal occupations cited by residents and practicing physicians included medicine and business ownership or management The percentage of USFMG practicing physicians reporting that their fathers were physicians (20.34%) was higher than the respective percentage of residents (13.4%). For both populations, over one-half of surveyed USFMGs' mothers were homemakers; clerical work (11%) was the second most common occupation.

The majority of residents (60.7%) and practicing physicians (57.6%) attended private colleges rather than state educational institutions. Residents attended undergraduate colleges in 29 states. Most studied in New York (27.7%) and California (12.5%). Practicing physicians studied in 47 states with New York (28.25%) and California (10.5%) cited most often.

Approximately three-quarters of both residents (75.9%) and practicing physicians (73.45%) majored in biological/medical sciences in college. Biology was reported as the most frequent major by both residents (46.4%) and physicians (42.4%). Over one-half of the residents (51.4%) and one-third of the practicing physicians (35.9%) stated that their grade-point average during their undergraduate studies was 3.0 or higher. The significantly larger number of residents with a higher grade-point average can be attributed to the increase in competition in the United States for medical education. MCAT scores, however, did not differ to such an extent between the two populations: 39% of the residents and 43% of the practicing physicians reported that their MCAT score was 601 or higher.

3.1 Characteristics of the Foreign Medical Education

On the average, one and a half years elapsed between USFMGs' graduation from college and entry to the foreign medical school. Mean age at entry to foreign medical school was 24. Upon entry to medical school, 30% of the surveyed USFMGs were married; 30% had children during their foreign medical studies.

Surveyed USFMGs applied to two foreign medical schools, on the average, and were accepted to 1.4 schools. The 463 USFMGs studied in 54 foreign medical schools. Practicing physicians attended 54 universities in 24 countries; residents attended 33 universities in 19 countries.

The largest number of USFMGs attended medical schools in Mexico (53.1%). Approximately 20% studied in Italy and 16.4% attended medical schools in Western Europe and Great Britain. Medical Schools in Spain (n = 10), Central American countries (n = 4), the Phillipines and the Dominican Republic (n = 14) were attended by three percent or fewer of the sampled USFMGs, as shown in Table III.1.

The University of Guadalajara was attended by over one-half of the residents (51.8%) and 46% of the practicing physicians, followed by the University of Bologna and the University of Rome, accounting for 15% and 19% of residents and practicing physicians respectively.

USFMGs who attended medical schools in Mexico, Italy, and Western Europe (including Britain), differed to a minor extent in terms of their socioeconomic background. The four groups differed significantly in age at entry to foreign medical school.* USFMGs attending schools in Western Europe were younger at entry to school (mean age of 22.6 years) than those who attended medical school in Italy (mean age of 23.3 years), or in Mexico (mean age of 24.8 years). Mean age at graduation from medical school, as reported by these three USFMG populations, was 29 years. The nearly identical age at graduation from medical school of USFMGs who studied in Mexico ($\bar{x} = 29.1$ years), and Western Europe ($\bar{x} = 28.7$ years) can be explained by the different medical curriculum length in these three countries. Compared to six years of medical education in Italy and Western Europe, the average length of the medical education program in Mexico is four years. Thus, on the average, USFMGs who studied in Mexican medical schools completed their medical education faster than USFMGs who attended schools in Europe.

The shorter medical curriculum in Mexican schools is offset by their requirement for a year of social service. This requirement can be waived by entering the Fifth Pathway program for a year of clinical training in the United States.

No significant differences were detected among these three groups of USFMGs with regard to their parents' education or racial and ethnic background. USFMGs who studied in Italy and Western Europe tended more frequently to have grown up in large metropolitan areas of one million or more, than did USFMGs who attended Mexican schools.

Although USFMGs in Mexican, Italian, and Western European schools did not differ in their college grade-point average, they differed significantly in their MCAT scores.** USFMGs who attended Western European medical schools had a higher MCAT score (mean score: 580) than USFMGs who attended Italian (mean score: 450) or Mexican (mean score: 530) schools.

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*$x^2 = 24.033$, 6d·f·, $p = .0005$

**$x^2 = 9.18$, 3d·f, $p = .027$

Table III-1

Countries of Foreign Medical Education

	Residents (N = 112)		Physicians (N = 351)	
	N	%	N	%
Central and South America				
Mexico	69	61.6	180	51.3
Phillipines	4	3.6	11	3.1
Dominican Republic	1	.9	3	.9
Argentina	1	.9	1	.3
Ecuador	1	.9	-	-
Guatemala	1	.9	-	-
Panama	1	.9	-	-
Asia				
India	1	.9	2	.6
Israel	-	-	3	.9
Iran	-	-	2	.6
East Pakistan	-	-	1	.3
Korea	-	-	1	.3
Europe				
Italy	17	15.2	68	19.4
Belgium	6	5.4	35	10.0
France	2	1.8	10	2.8
Spain	1	.9	9	2.6
Austria	1	.9	4	1.1
Greece	1	.9	4	1.1
Switzerland	-	-	5	1.4
United Kingdom	-	-	3	.9
Ireland	1	.9	1	.3
West Germany	-	-	2	.6
Iceland	-	-	1	.3
Poland	-	-	1	.3
Scotland	-	-	1	.3
Sweden	1	.9	-	-
Turkey	1	.9	-	-
Yugoslavia	1	.9	-	-
Other				
South Africa	-	-	2	.6
Australia	1	.9	-	-
Zambia	-	-	1	.3
Total		100.2*		100.3*

*Totals do not add to 100 percent due to rounding.

Generally, surveyed USFMGs performed well academically in their respective foreign medical schools. Of the 383 USFMGs (83%) who reported their overall grade-point average during their foreign medical education program, only 11.23% had a GPA of less than 3.0 (out of a 4.0 grade system). Approximately one-half had a GPA in the 3.0 to 3.49 range, and 40% achieved average grades of 3.5 to 4.0. Indeed, the mean GPA for USFMGs who reported their grades during foreign medical school was around 3.5.

To finance their foreign medical education, USFMGs used multiple financial assistance sources. Most frequently, USFMGs used a combination of these five sources:

- personal savings
- parents' financial assistance
- spouse's assistance
- state financial assistance
- federal (U.S.) financial aid.

Of these sources, an overwhelming majority of USFMGs (82.9%) received financial assistance from their parents. Over one-half (51.8%) used personal savings, and nearly one-quarter (22.7%) were assisted through their medical education by their spouses. However, between 20% and 30% also received financial aid from their respective state agency (21.6%) or from the U.S. federal government (29.6%).

The relationships among the sources USFMGs used to finance their medical education and their urban, suburban, or rural background; country of medical education; specialty choice; and urban, suburban, rural, shortage/non-shortage area of initial practice location were examined. Parental assistance was the major financial assistance source used in all situations, followed by the use of personal savings. However, USFMGs who grew up in rural communities were significantly more likely to obtain federal financial aid (44.2%) than USFMGs who grew up in urban or suburban areas (28.0%). These three groups were comparable in their receipt of state financial assistance (21.0%).

U.S. financial aid was also more frequently given to USFMGs who studied in Mexican medical schools than to USFMGs who studied in other countries. In fact, nearly 40% of the USFMGs who attended Mexican schools received federal financial aid, compared with approximately one-fifth of those who studied in the other countries (17.4% - 22.4%). On the other hand, 30% of the USFMGs who studied in Italian and Western European medical schools received state financial aid, but only 15% USFMGs who studied in the other countries were recipients of state financial aid.

USFMGs with primary care and other specialties were more frequent users of federal financial aid (31.2% - 33.3%) than those in surgical and hospital-based specialties.

Recipients of federal financial aid more frequently chose to locate their initial practice in rural areas (37.9%) or in suburban areas (33.6%) than in urban areas. Receipt of federal aid to finance foreign medical education did not distinguish subsequent practice location in counties with shortage or non-shortage areas. However, recipients of state financial aid tended more than twice as frequently to locate their practice in counties with shortage areas (24.5%) than in counties with non-shortage areas (11.8%).

3.2 USFMG Evaluation of the Quality of Foreign Medical Education

To evaluate their foreign medical education, USFMGs were asked to rate the quality of their school's facilities, equipment, faculty, curriculum, and clinical training. As part of the evaluation of the foreign medical school facilities, USFMGs were asked about the presence of on-campus clinical facilities. The majority of the foreign schools attended by USFMGs had on-campus clinical facilities (83.8%). Significantly fewer of the Mexican medical schools attended by USFMGs had on-campus clinical facilities (79.3%) than did medical schools in any of the other countries.* Ninety-three percent of the USFMGs who studied in Italy reported the existence of on-campus clinical facilities in their respective schools; 87.2% of those who studied in Western Europe and 85% of USFMGs who attended medical schools in other countries reported similar data.

Of all surveyed USFMGs, 63% rated the facilities of the school they had attended as "excellent" or "good." Satisfaction with medical school facilities varied by country.** While only over one-half of those who studied in Mexico (56.11%) assessed their school facilities as "good" or "excellent," 81.4% of those who studied in Western Europe and nearly two-thirds of the USFMGs who had studied in other countries gave a high rating to the facilities of their respective medical schools.

Satisfaction with medical school equipment was reported only by 52% of the surveyed USFMGs. Significantly fewer USFMGs who studied in Mexico (46.3%), Italy (49.4%), and all other countries (43.5%) evaluated the medical school equipment as "good" or "excellent" than did those who studied in Western Europe (72.9%).***

Overall, more USFMGs were satisfied with the foreign medical school curriculum and faculty than with available equipment and facilities. Seventy-nine percent of USFMGs rated the curriculum as "good" or "excellent." Nearly all USFMGs who studied in Western Europe (94.2%) and the majority of those who studied in Italy (87.1%) and in all other countries (89.1%) expressed such an opinion, compared with only two-thirds of those who studied in Mexico.

A similar pattern was also evident in USFMGs' assessment of medical school faculty. Overall, 72% of the USFMGs thought highly of their foreign medical school faculty. Nearly all USFMGs who studied in Italy (90.6%), Western Europe (93%), and all other countries (95.7%) gave the faculty a "good" or "excellent" rating, compared with only 52% of those who studied in Mexico.****

As demonstrated in previous studies, foreign medical schools provide limited clinical training to medical students. For example, in Italian medical schools, students are not exposed to patients until the fifth year of the program, while Mexican schools expose students to community medical services during each semester. Americans who studied medicine in Mexico (1) complained about the competence and experience of the clinical instruction received in such clinics and about the limited or non-existent exposure to hospital settings. Similar conclusions about the limited emphasis on clinical training in foreign medical schools were also formulated by the GAO team; (2) who visited six foreign medical schools with the largest American student populations.

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*$x^2 = 11.651$, 3d·f, $p = .009$

**$x^2 = 76.042$, 9d·f, $p = .0001$

***$x^2 = 63.717$, 9d·f, $p = .0001$

****$x^2 = 184.510$, 9d·f, $p = .0001$

Consistent with these findings, only 37% of USFMGs expressed satisfaction with the quality of clinical training they had received in their respective foreign medical school. The highest level of satisfaction with clinical training was expressed by USFMGs in the "all other countries" category (84.8%). Approximately two-thirds (66.3%) of USFMGs in Western European schools stated that the clinical training they had received was "good" or "excellent." Only 24.7% of those who studied in Italy and 21.1% of those who studied in Mexico expressed similar satisfaction.*

Of the five criteria used to evaluate the quality of the foreign medical schools--facilities, equipment, faculty, curriculum, and clinical training--USFMGs were most satisfied with curriculum and faculty, and least satisfied with clinical training. Over one-quarter of the surveyed USFMGs rated the clinical training they had received as "poor," as shown in Table III.2. Given the strong emphasis that American medical education puts on clinical training, these data reveal a source of incompatability encountered by USFMGs once they participate in graduate medical programs in the United States. Moreover, the low ratings given by USFMGs who studied in Mexico and in Italy concerning some of these components of medical education raise questions about the quality of medical training provided to USFMGs in these countries. In comparison, USFMGs who studied in Western European countries consistently exhibited a high level of satisfaction with all the components of their medical education program.

Table III-2

Percent of USFMGs Rating their Medical Education as "Good" or "Excellent"

	Overall	Mexico	Italy	W. Europe	All Other
Facilities	63%	56.2%	64.7%	81.4%	65.2%
Equipment	52	46.3	49.4	72.1	43.5
Faculty	72	52.0	90.6	93.0	95.7
Curriculum	79	67.1	87.1	94.2	89.1
Clinical Training	37	21.1	24.7	66.3	84.8

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*$x^2 = 141.462$, 9d·f, $p = .0001$

3.3 The Coordinated Transfer Application System (COTRANS)

The COTRANS program provides a mechanism that allows U.S. students at foreign schools to transfer with advanced standing to an accredited U.S. medical school. The COTRANS program was established in 1970, by the Association of American Medical Colleges, to assist U.S. medical schools by evaluating the credentials of U.S. citizen medical students seeking to transfer from foreign medical schools. COTRANS arranges for students to take Part I of the National Board Examination, after determining whether they meet other eligibility requirements. After passing the examination, applications apply directly to medical schools; the schools' admissions committees make their selection from this group of candidates.

Statistics aggregated by Dube (3) show that between 1970-72, 3,508 applications were received requesting participation in the program; 1672 of the applications were found eligible. Of those 1,672, 1,383 took the examination, and 394 (28.5%) passed the examination. Among the 676 who were sponsored by COTRANS, 68% were from Mexican schools, 8.6% from Italian medical schools, and 12.6% from Western European schools. USFMGs from Italian and Western European schools performed significantly better on the NBME examination than did those from Mexican schools.

During the first three years of the program, 400 USFMGs were successful in transferring to U.S. medical schools. From 1972-77, 6,046 USFMGs were sponsored by COTRANS, 4,951 (82%) were tested, and 2,217 (44.8%) passed the test. The percent of those passing has increased from 31.8% in 1972 to over 50% in 1975, 1976, and 1977. USFMGs from Mexico have been the largest group. On the average, 241 USFMGs transferred each year, between 1972-77, into American medical programs.(4) In this study, approximately one-third of the USFMGs surveyed attempted to transfer to a U.S. medical school through COTRANS(31.1%). Of those who attempted to transfer, approximately 10% studied in Italy, 10% in Western Europe, and 10% in other countries. Consistent with previous studies, the majority of USFMGs attempting to transfer through COTRANS were those who studied in Mexico (67.4%). Indeed, about 40% of USFMGs who studied in Mexico indicated that they tried to transfer with advanced standing to a U.S. medical school.

Of the 144 USFMGs who wanted to transfer to a U.S. medical school via COTRANS, only 5% were accepted. These seven USFMGs chose to complete their studies in their respective foreign medical school. The reasons for that decision, cited by the seven USFMGs, ranged from inability to gain admission to medical school of choice, to inability to carry financial burden of medical education in the United States, losing a year in medical school because of transfer, preference for and satisfaction with medical education abroad, and personal reasons.

3.4 Fifth Pathway

An alternative way for USFMGs to enter the American medical education system is provided by the Fifth Pathway program. Established in 1970, this program is available to American citizens who study medicine in foreign schools requiring a year of internship or social services before granting the medical degree.

The Fifth Pathway program provides USFMGs with a year of undergraduate clinical training in the United States, under the supervision of a U.S. medical school. This year of clinical training is analogous to the third year of core clinical curriculum in a U.S. medical school. To participate in the Fifth Pathway program, USFMGs are required to pass a screening examination: the ECFMG examination, described in the next section. Successful completion of this year allows USFMGs to enter graduate medical training either through individual negotiations with a particular residency program or by participation in the National Resident Matching Program.

Over one-half of the USFMGs surveyed (54%) participated in the Fifth Pathway program. Surveyed USFMGs had taken part in the program since its inception in 1970. Participation in the program ranged from 10% OF USFMGs who graduated from foreign medicals in 1970 and 1971, to approximately one-half of the USFMGs who graduated in 1975 or later.

Participation in the Fifth Pathway program was highest, as expected, on the part of USFMGs who graduated from Mexican medical schools. Eighty-eight percent of those who studied in Mexico took part in the program, compared with 26.1% of USFMGs in the "all other countries" category, 11.6% of those who attended Western European schools, and 5.9% of USFMGs who studied in Italy.* The high rate of participation of USFMGs who studied in Mexico in the Fifth Pathway program was also demonstrated in an earlier study by Stimmel and Smith.(5) Of 335 surveyed participants in the Fifth Pathway program from 1975-77, 93% of the participants came from Mexican schools.

The Fifth Pathway program was not the USFMGs' first encounter with American clinical training. Of the surveyed USFMGs, 81% received clinical training in U.S. medical programs as part of their foreign medical education. In nearly all instances, clinical training in a U.S. medical hospital was arranged by the USFMG (95.4%) himself/herself.

Most of the clinical training programs in which USFMGs participated during their foreign medical education program and as part of the Fifth Pathway program were located in New York, New Jersey, and California. Fifty-one percent of USFMGs who participated in U.S. clinical training programs, and 67% of those who took part in the Fifth Pathway program, received their training in New York and New Jersey. Over 10% received such training in California. New York, New Jersey, and California constitute the three states from which the largest groups of USFMGs originate. In fact, cross-tabulations demonstrated that USFMGs tended to select clinical training opportunities in the states in which they had grown up, and also, in many cases, in the states in which they had received their college education.

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*$x^2 = 267.592$, 3d·f, $p = .0001$

3.5 The ECFMG Examination

As a pre-requisite to entering graduate medical education in the United States, USFMGs are required to take the Education Commission for Foreign Medical Graduates (ECFMG) examination. The ECFMG examination serves as a screening device to ascertain that successful applicants possess the minimum medical knowledge expected of American medical school graduates.

Previous data on USFMG scores on the ECFMG examination indicate that the majority of USFMGs pass the examination only after taking it more than once. The passing scores achieved by USFMGs, however, are marginal. For example, in a study of 306 USFMGs who took the ECFMG examination in 1975, 1976, and 1977,(6) 85% passed the examination. However, 40% had to repeat the examination at least once. The mean score of the sampled USFMGs on the test was 76 (a 75 score is necessary for passing). Of the 260 who passed, 40% had a score of 75, 15% scored 76, 15% scored 77, and 30% scored 78 or higher. The majority of USFMGs passed the examination by a narrow margin.

The ECFMG examination was taken by 99.1% of the USFMGs in our sample. Approximately two-thirds (64%) of the sampled USFMGs took the ECFMG examination once. Over one-quarter (25.3%) took the examination twice, and the remaining 10.8% took it three or more times. On the average, USFMGs took the examination 1.5 times. The number of times USFMGs took the ECFMG examination varied significantly by country of foreign medical education.* A larger proportion of USFMGs who graduated from Western European (77%) and "other" schools (74%) passed the examination after taking it the first time than did USFMGs who graduated from Italian (65%) and Mexican (58%) schools. The average score obtained by USFMGs was 78.3%, only marginally higher than the mandatory passing score of 75%. The ECFMG scores obtained by sampled USFMGs were similar to the scores reported by Weinberg and Bell, cited above. However, a large percentage of USFMG graduates of schools in Western Europe (36%) scored significantly higher than graduates of other foreign medical schools.**

3.6 Entry into the U.S. Medical Delivery System

The path followed by USFMGs upon completion of their medical education abroad is to enter the U.S. medical delivery system via participation in graduate medical training in the United States. The ECFMG examination and the Fifth Pathway constitute a means for entering such graduate medical training programs. Indeed, nearly the entire sample of USFMGs obtained all or part of their graduate medical training in the United States: 94% of the sampled USFMGs obtained their entire graduate medical training in the U.S., and 5.2% obtained part of their graduate medical training in the United States.

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* $x^2 = 18.332$, 6d·f·, $p = .0055$

** $x^2 = 12.394$, 3d·f·, $p = .006$

3.7 U.S. Graduate Medical Training

On the average, USFMGs participated in 1.6 graduate medical training programs in the United States: approximately one-half of the USFMGs participated in one graduate program (48.2%), over one-third obtained graduate medical training in two programs (37.1%), and 14% took part in three or more programs.

The graduate medical education programs in which USFMGs participated were located in 36 states. The largest number of USFMGs chose to obtain their graduate medical training in New York (34.1%) and New Jersey (11.7%); the two states in which a large number of USFMGs grew up and obtained their undergraduate education. Smaller groups of USFMGs participated in graduate medical training in California (7.1%), Ohio (6%), Connecticut (5.2%), and Pennsylvania (5%). The location of graduate medical training programs reflects the geographic distribution of USFMGs' home state and state of undergraduate education.

Fewer than one-half of the USFMGs (47.3%) located their respective medical education program through the National Resident Matching Program The NRMP serves as the major means for assigning American medical students to graduate training programs. Participation in the program varied significantly by country of foreign medical education.* Over one-half of the USFMGs who graduated from schools in Mexico and Western Europe participated in the program, compared with one-quarter to one-third of the USFMGs who graduated from Italian and other medical schools.

The main reasons USFMGs cited for not using the matching program to get into graduate medical training programs in the United States are presented in Table III-3. USFMGs who did not take part in the NRMP program preferred, in most cases, to identify a suitable graduate medical training program on their own, or to use other arrangement services.

During their participation in U.S. graduate medical training programs, surveyed USFMGs encountered a variety of problems, which they attributed to their foreign medical education and to their "status" as USFMGs.

The problems reported by USFMGs are presented in Table III-4. These problems can be classified into three categories: attitudinal, medical-contextual, and medical-clinical.

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* $x^2 = 36.944$, 3d·f·, $p = .0001$

Table III-3

Reasons for Not Participating in NRMP (N = 241)

	N	%
USFMG participated in another program	35	14.5
USFMG made own arrangements	101	41.9
USFMG was not eligible at time of graduation from foreign medical school to take part in program	12	5.0
USFMG could not invest the time or money necessary for participation in NRMP	12	5.0
USFMG was uncertain of date of graduation	27	11.2
USFMG could get into a better graduate training program without NRMP assistance	19	7.9
Graduate medical training was not required for selected specialty	4	1.7
Personal reasons	13	5.4
Didn't know about program	18	7.5

Table III-4

Problems Encountered by USFMGs During Graduate Medical Training (N=463)

	N	%
Attitudinal		
Doctor-patient relationship	10	2.2
Attitudes of faculty	148	32.0
Attitudes of hospital staff	51	11.0
Attitudes of residents who graduated from foreign medical schools	89	19.2
Medical-Contextual		
Knowledge of basic medical science	86	18.6
Performance of general hospital duties	103	22.2
Medical-Clinical		
Patient history taking	33	7.1
Conduct of physical examinations	41	8.9
Conduct of physical-medical diagnosis	43	9.3
No problems	62	13.4

Note: Total values do not add to 463 or 100 percent as respondents were asked to indicate all applicable answers.

Of the nine problem areas reported by surveyed USFMGs, "attitudes of faculty toward USFMGs" during graduate medical training constituted the most common source of complaints. Nearly one-third of the surveyed USFMGs experienced unfavorable faculty attitudes during their participation in a U.S. graduate medical training program. Unfavorable attitudes toward USFMGs on the part of other foreign-trained residents and on the part of hospital staff were also reported by a considerable number of respondents.

USFMGs, however, also encountered difficulties resulting from the deficiencies in their foreign medical training. These difficulties were manifested both in USFMGs' basic medical science knowledge (a deficiency reported by nearly one-fifth of the respondents) and in their ability to perform general hospital duties (reported by over one-fifth of surveyed USFMGs). Difficulty in performing specific clinical functions (such as patient history taking, performance of physical examinations, or physical-medical diagnosis) was reported by 7 to 9% of respondents.

The attitudinal, clinical, and contextual problems experienced by a considerable number of USFMGs in this study (and reported in previous research on FMGs and USFMGs in residency programs) is consistent with USFMGs' assessment of deficiencies in their foreign medical education.

The difficulties encountered by USFMGs in their graduate medical education programs varied significantly by country of medical education (see Table III-5). A comparison of the two most frequently cited areas of difficulty revealed that USFMGs who had studied in Mexico were most often disturbed by the attitudes of faculty in the graduate medical training program and by deficiencies in their knowledge of basic medical science.* U.S. graduates of Italian medical schools found the performance of general hospital duties to be their major area of difficulty, followed by the negative attitudes of faculty in the graduate training program. These two areas of difficulty were also voiced by USFMGs who studied in Western European medical schools. USFMGs who graduated from medical schools in other countries most often identified negative attitudes on the part of faculty and other USFMG residents as their major area of difficulty in their graduate medical training program.

As shown in Table III-5, while USFMGs frequently faced medical-contextual or medical-clinical difficulties in their graduate medical training program, the area of difficulty cited most often by USFMGs--regardless of country of foreign medical education--pointed to the negative attitudes of faculty toward USFMGs.

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* $x^2 = 30.966$, 3d·f·, $p = .0001$

** $x^2 = 24.076$, 3d·f·, $p = .0001$

Table III-5

Difficulties Encountered During Graduate Medical Training that Were Attributed to Foreign Medical Education or USFMG Status

	Foreign Medical School							
	Mexico (N = 246)		Italy (N = 85)		W. Europe (N = 86)		Other (N = 46)	
	N	%	N	%	N	%	N	%
Knowledge of basic medical science	64	27.2	6	7.1	4	4.7	9	19.6
Performance of general hospital duties	38	15.4	34	40.0	23	26.7	9	19.6
Patient history taking	15	6.1	12	14.1	6	7.0	1	2.2
Conduct of physical examinations	21	8.5	15	17.6	5	5.8	1	2.2
Conduct of physical-medical diagnosis	34	13.8	5	5.9	3	3.5	1	2.2
Doctor-patient relationship	8	3.3	2	2.4	2	2.3	1	2.2
Attitudes of faculty	89	36.2	25	29.4	22	25.6	13	28.3
Attitudes of hospital staff	25	10.2	6	7.1	13	15.1	8	17.4
Attitudes of residents who graduated from foreign medical schools	32	13.0	16	18.8	19	22.1	10	21.7

3.8 Foreign Graduate Medical Training

Only 17 out of the 463 sampled USFMGs (3.7%) obtained their graduate medical training abroad. Graduate medical training was obtained by USFMGs in 12 countries. Countries in which graduate medical training was obtained ranged from West Germany, Italy, France, the United Kingdom, and Switzerland (in Europe), to Mexico, Spain, and the Phillipines. On the average, USFMGs completed graduate medical training in 3.3 years.

Among specialties chosen by USFMGs who obtained their graduate medical training abroad are general practice, internal medicine, obstetrics/gynecology, pediatrics, anesthesiology, diagnostic radiology, and general surgery.

Most of the 17 USFMGs who chose to obtain their graduate medical training abroad cited as reasons the availability of good graduate training programs in their area of specialty and inability to gain access into a preferred residency program in the United States.

3.9 Licensure

The Federation Licensing Examination (FLEX) has been adopted by all states and by the District of Columbia as the state medical licensing examination. Nearly all (94.6%) surveyed USFMGs currently hold full, unlimited state licenses to practice medicine. More than half of the sampled USFMGs (61.1%) obtained their state licenses between 1976 and 1981.

Surveyed USFMGs hold licenses in 39 states. The largest percentage of USFMGs are licensed to practice medicine in New York (35.2%), followed by 9% of USFMGs with licenses in California. Other USFMGs hold licenses to practice in New Jersey (5.8%), Pennsylvania (4.3%), Maine (4.5%), and Connecticut (4.8%).

To obtain a license to practice medicine in their respective state, USFMGs took the FLEX examination 1.2 times on the average. Indeed, 79% took the examination once, 10.4% took it twice, and 6.7% took it three or more times before receiving a passing score.

There are 25 USFMGs not yet licensed. More than half of them planned to locate their practice following licensure in a different state than the state in which they received graduate medical training. Fewer than half contemplated staying in the state of their graduate medical training, but expected to start a practice in a different community. Nearly all (84%) hoped to have an office-based practice, rather than a hospital-based position.

Chapter III: Footnotes

1. Urban Systems Research and Engineering, Final Report: Analysis of Deficiencies in the Foreign Medical Education of U.S. Foreign Medical Student Transferees (Health Resources Administration, April 23, 1979).

2. The Comptroller General, Report to the Congress of the United States: Policies on U.S. Citizens Studying Medicine Abroad Need Review and Appraisal (U.S. General Accounting Office, November 21, 1980).

3. W.F. Dube. "Datagram: COTRANS: A Progress Report," Journal of Medical Education 48 (May 1973), pp. 459-461.

4. W.F. Dube. "Datagram: COTRANS: An Overview, 1972 through 1977," Journal of Medical Education 3 (March 1978), pp. 217-219.

5. Barry Stimmel, M.D., and Harry Smith, Ph.D., "Career Choice and Performance on State Licensing Examinations of 'Fifth Pathway' Students." New England Journal of Medicine 299, No. 5, August 1978.

6. Ethel Weinberg, M.D., and Anita I. Bell, Ph.D., "Performance of United States Citizens with Foreign Medical Education on Standardized Medical Examinations," New England Journal of Medicine, Vol. 299, No. 16, October 19, 1978.

CHAPTER IV. USFMG SPECIALTY CHOICE

USFMGs' decisions regarding specialty choice and practice location constitute the two main issues addressed in this study. This chapter focuses on the specialty choice issue.

The specialty choice analysis presented in this chapter combines:

- a review of physicians' specialty choice research studies
- a description of the specialties selected by surveyed USFMGs, the factors affecting specialty choice decisions, and USFMGs' success in obtaining specialty board certification
- USFMG medical specialty and practice characteristics
- a specialty choice model developed via the logit multinomial analytic technique.

4.0 Physicians' Specialty Choices: A Literature Review

The career choice behavior of physicians has been the focus of much research over the past two decades by medical sociologists and, more recently, by medical economists. This study focused on the more recently published works in which the individual physician was the unit of analysis, since this study was performed at the micro-level (i.e., individual physician) of analysis. Central to the literature review were studies dealing with classes of explanatory variables that consistently performed well as predictors of physicians' preferences among specialties and/or types of practice.

The micro level studies of physicians' career choices were characterized by a fair degree of heterogeneity in terms of the particular dependent and explanatory variables employed in predicting physicians' preferences among specialties, and in terms of the physician population under analysis. In most studies, the dependent variables were particular specialties (i.e., general practice, internal medicine, general surgery, etc.) for which physicians indicated a career preference.(1) In other studies, career choices were couched in terms of type of practice (e.g., general practice, specialty practice, academic medicine).(2) However, the particular explanatory variables employed by researchers in these studies did not seem to vary systematically with the form of the (dependent) career choice variables. With respect to the physician population of interest, many of the research studies reviewed examined the career plans of physicians during their residency training.(3) Still others were studies of the determinants of career choices of practicing physicians who had already completed their residency.(4) Yet another group of studies attempted to explain the preferred specialties articulated by physicians-to-be at various stages in their medical school programs.(5)

The generalizability of the findings of many of the studies reviewed was limited by a problem that has historically plagued research on physicians' career choices; namely, the populations under study tend to be small in size or drawn from a limited number of medical schools or residency programs.(6)

While the literature on physician specialty choice varied in terms of the explanatory variables employed in particular studies, we were able to identify four primary categories into which many explanatory variables could be classified. These were:

- socio-demographic characteristics of the physician
- measures of the physician's academic ability and education
- characteristics of the medical school attended and the physician's educational experience
- personality characteristics of the physician.

We had data for only the first three categories. Perhaps the most consistent finding in our review is that these explanatory variables have been most useful in predicting a physician's choice of a primary-care specialty and less successful as predictors of physicians' choices of other types of specialties.(7) Certain categories of explanatory variables also consistently performed well across all of the analyses reviewed. The relationships found to exist in the literature between physicians' specialties or career choices and particular explanatory variables within each of these four main classes are presented in the following sections.

4.1 Socio-Demographic Characteristics

Among the demographic variables found by researchers to be most significant in explaining career preferences is the sex of the physician. In particular, female physicians are more likely than male physicians to select specialties such as pediatrics and psychiatry, and are less likely to seek residency training in surgical specialties.(8) Among the reasons offered for such observed differences are: a) women select specialties in which they will be able to exercise the most control over schedules and work hours; and b) due to history, tradition, and the possibility of bias on the part of residency selection committees, women are not able to obtain residency positions in surgical specialties as easily as men.

Other socio-demographic variables that researchers have employed with good results in analyzing specialty choice are the physician's age, marital status, and number of children upon admission to (or graduation from) medical school.(9) Watson and Croft (1978), for example, showed that these three variables were highly correlated with their primary discriminant function in a multiple discriminant analysis of physician specialty choice.(10) Most commonly, research shows that students who become general practitioners tend to be older at admission than students who go on to specialize in other fields. Marital status and number of children are not infrequently significant predictors of specialty, but the specialties with which they are associated most strongly tend to vary across studies. However, the most common result seems to be that general and family practitioners were more likely to be married and/or to have children at the time they were in medical school than were physicians in other specialties.(11)

Among the remaining demographic characteristics of physicians that researchers employed, with mixed results, in analyzing physicians' career preferences are: race, measures of the socioeconomic status of the physician's family (often provided by parents' education level), the physician's birth order/number of siblings, and whether one parent was a physician. Of the socio-demographic variables that seem to vary significantly across empirical studies, the size of the community where the physician grew up and physician's ethnicity seem to be the best of this group.(12) Growing up in a small town tends to characterize general practitioners much more than other specialists.

4.2 Measures of Physicians' Academic Ability and Educational Background

Perhaps the most frequently used measure of physicians' academic abilities is their scores on the various components of the Medical College Admissions Test (MCAT). Of the four MCAT components (verbal, quantitative, general information and science), the verbal test score seems to be associated with the most consistent results. In particular, physicians who select the specialty of psychiatry tended to score higher on the verbal MCAT than did other categories of physicians (e.g., those in surgical specialties).(13) Yet another common indicator of physicians' academic ability employed by researchers is medical school grade point average. Anderson (1975), for example, reported that senior year medical school grades (as well as grades during the first year of medical school and first year class rank) were among the ten most important variables in a discriminant function analysis of the specialty preferences of interns. In two summary articles, Hadley (1975) and Zuckerman (1977) report that students planning careers in general practice are characterized by relatively low academic standing in medical school. Essentially similar findings were reported by Monk and Thomas (1973) who found that physicians practicing internal medicine and general surgery had the highest grade point averages in medical school, while obstetrician/gynecologists and pediatricians had the lowest.

4.3 Characteristics of the Medical School Attended and the Physicians' Educational Experiences

The importance of the medical school experience as a factor in the physician's career choice decision has been investigated by various researchers over the past two decades. In a summary of this literature, Zuckerman (1977) recounted the argument that medical school training is a complex socialization process. In the medical school environment, the attitudes and values of medical students are possibly reshaped as a result of students' interactions with medical school faculty, physician-advisors, and peers.(14) Zuckerman also reports the argument that the longer the student is subjected to such forces within the medical school environment, the less important factors relating to the student's socio-demographic background become as determinants of career preferences.

As is true for most of this discussion on the relationship between career preferences and their determinants, most research focuses upon the preferences articulated by students in medical school and residency programs. Cuca (1979),(15) for example, reported the responses from a 1976 nationwide survey of medical school graduates to the question "Of how much importance was each of (19 factors) in your choice of specialty?" Both male and female graduates rated the same four factors as most important--and in the same order of preference.(16) Among these, the second most important factor was "positive clinical experience in chosen specialty." In this same study, however, Cuca found that other medical education variables were not identified as particularly important factors in the career preferences of graduates. Among the list of 19 variables, "medical school faculty" was ranked 11; "other medical students" ranked 14; "length of residency program" ranked 15; and "negative clinical experience in other than chosen specialty" ranked 7 in terms of influence on specialty choice for both men and women.

In their analyses of factors predicting preferences of residents in internal medicine with regard to primary care or subspecialty care, and in clinical practice or academic medicine, Weil and Schleiter (1981) found that the type of medical school attended had the second strongest total effect among all explanatory variables.(17) Support for the importance of medical school influence on career preferences is provided by Long (1980) in his study of specialty choices of black U.S. physicians. He reported that black U.S. foreign medical graduates were most like foreign medical graduate (FMG) board specialists in terms of specialty choices, while black graduates of U.S. and Canadian schools displayed career choices most like those of other board specialists who graduated from U.S. and Canadian schools. "If any systematic bias can be detected, it is suggested that medical education or, more specifically, the country of medical education, is the variable influencing that bias" (Long, 1980).(13)

While some researchers contend that aspects of the medical school environment are important determinants of physicians' career preferences, other researchers disagree. Funkenstein (1979), for instance, compared shifts in career preferences of freshman and senior medical students throughout the 1970s. His finding of parallel shifts in the stated career preferences of these two groups during the same calendar year suggest that forces outside the medical school were of primary importance in forming physicians' career preferences.(19) In a different context, Hadley (1977) found that characteristics of a physician's medical school were generally insignificant predictors of the physician's actual specialty of practice more than a decade following graduation.(20) However, he warned that the high degree of correlation among these variables might explain the lack of statistical significance of any particular variable in his empirical work. Hadley also suggested that "difficult-to-observe personal interactions among faculty and students" were likely to be important determinants of the physician's career preferences. The notion that interpersonal interactions among students and faculty are important factors in the physician's career preferences is supported by Anderson (1975). In a study of stated career preferences of interns using step-wise discriminant analysis, Anderson found that four of the ten most important determinants of career preferences were related to interactions among students and faculty in medical school.(21)

4.4 Other Explanatory Variables

In the foregoing sections, we assessed findings regarding the relationship between physicians' career preferences and elements of the major categories of explanatory variables employed in empirical research. In each research study, particular variables not included in these major categories were often employed. By and large, these variables were either not statistically significant or were unique to the particular study under consideration--rendering impossible any determination of their general utility as explanatory variables. Hadley (1977), for example, included characteristics of the particular specialties under investigation as dependent variables in his analysis. These variables measured the relative income potential in each specialty, as well as the relative length of graduate training required for each (a measure of opportunity cost) and the relative availability of residency positions in selected hospitals. Hadley found the income variable to be generally insignificant and, frequently, of the wrong sign in his specialty choice equations. While the coefficients of the other two variables in his equations were frequently significant, they had the opposite sign from the one hypothesized. One conclusion Hadley drew from these results was that economic incentives were not major factors explaining specialty choice.

Among the variables identified as significant or important in only a few studies was a time-trend measure. Cuca (1979), for instance, found that the specialty choices of 1960, 1976, and 1978 medical school graduates displayed noticeable secular trends. In particular, there was a decline in the number of female graduates choosing pediatrics as a preferred specialty, and there were general increases in their selection of other primary-care specialties (especially internal medicine). For male graduates, primary-care specialties also increased in popularity between 1960 and 1976, while interest in surgical specialties declined over this period. In his 1979 report, Funkenstein hypothesized that medicine--and medical education--had passed through six distinct secular periods since the Flexner Report of 1910.

The most recent period--1975 to the present--he has labeled the Primary Care and Increasing Governmental Control Era. The most important event in this era was the passage of the Health Professions Educational Assistance Act of 1976 (HPEAA), the intent of which was to increase the supply of primary-care physicians in medically underserved areas. It would appear that a time-trend measure of shifts in government policies and/or societal attitudes toward medicine and the delivery of medical care might be a useful variable in explaining physicians' career choices over the past decade.*

4.5 Specialty Choice During Graduate Medical Training

During their graduate medical training, USFMGs reported 26 areas of specialization. Most frequently, USFMGs specialized in internal medicine (26.8%), family medicine (13.8%), general surgery (13%), pediatrics (12.5%), diagnostic and therapeutic radiology (4.5%), and psychiatry (4.5%). The specialty choices made during graduate medical training changed, however, for nearly one-fifth (18%) of USFMGs.

The specialties reported by USFMGs were classified into four specialty categories:

1. Primary Care Specialties
   - general practice
   - family practice
   - internal medicine
   - general pediatrics
   - obstetrics and gynecology**
2. Surgical Specialties
   - general surgery
   - neurological surgery
   - ophthalmology
   - orthopedic surgery
   - otolaryngology
   - plastic surgery
   - colon and rectal surgery
   - thoracic surgery
   - urology
3. Hospital-based Specialties
   - anesthesiology
   - pathology
   - diagnostic and therapeutic radiology
   - physical medicine and rehabilitation
4. Other Specialties

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*Comparisons between USFMGs who graduated before and after the passage of the HPEAA did not reveal significant differences in their specialty choice, socio-economic background, or experiences along the medical education and practice continuum.

**Obstetrics and gynecology are included in the primary-care specialty area, according to the AMA classification.

As shown in Table IV-1, primary-care specialties were most prevalent among USFMGs. Nearly two-thirds of USFMGs reported their specialty in the area of primary care (63.9%). Over one-eighth specialized in surgical areas (13.3%), with general surgery (12.9%) reported most frequently. Hospital-based specialties were reported by 8% of the USFMGs, as were other specialties. Radiology was most commonly reported as a hospital-based specialty, while psychiatry was most prevalent among the specialties included in the "other specialties" category.

USFMGs were also asked to identify their second and third specialties. About one-third of the surveyed USFMGs identified second specialties, and only 3% reported a third specialty. Second specialties were reported by just about one-fifth of those USFMGs with a first specialty in either the hospital-based or other category, by approximately one-third of those with a primary care first specialty, and by just more than 40 percent of those USFMGs with a surgical first specialty.

As shown in Table IV-2, the likelihood that USFMGs' first and second specialties would be in the same specialty area varied across USFMG groups. Of the USFMGs with second specialties, USFMGs with primary surgical specialties tended to have a second specialty in their primary specialty area more often than any of the other three specialty groups. A similar pattern was evident among USFMGs with "other" specialties. Only a small percentage of USFMGs in the primary-care specialty area, and no USFMGs with primary hospital-based specialties, tended to have a second specialty in their main specialty area.

4.6 Factors Involved in USFMG Specialty Choice

To determine the major motivations of USFMGs in selecting their specialty, USFMGs were presented with eight motivational factors frequently cited in the literature as significant explanations of physician specialty choice. The motivations cited can be classified into three categories:

- encouragement of significant others in selecting a particular specialty
- attributes of the specialty (e.g., patient contacts, interest)
- economic/environmental aspects of the specialty (e.g., demand for specialty, income potential).

Table IV-1

Area of Specialty

Primary Specialty	USFMGs N	USFMGs %
Primary Care Specialties	296	63.9
general practice	5	1.1
family practice	64	13.8
internal medicine	124	26.8
general pediatrics	58	12.5
obstetrics and gynecology	45	9.7
Surgical Specialties	87	18.8
general surgery	60	12.9
ophthalmology	4	.9
orthopedic surgery	8	1.7
plastic surgery	1	.2
urology	12	2.6
other surgical specialties	2	.4
Hospital-Based Specialties	36	7.8
anesthesiology	11	2.4
pathology	3	.6
diagnostic and therapeutic radiology	21	4.5
physical medicine and rehabilitation	1	.02
Other Specialties*	37	8.0

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*The category of other specialties includes: psychiatry (4.5%), gastroenterology, neurology, and emergency medicine.

Table IV-2

USMFG Primary and Secondary Specialty Areas

Primary Specialty Area:	Second Specialty Area			
	Primary Care	Surgical	Hospital-Based	Other
Primary Care (N=81)	19%	4%	10%	68%
Surgical (N=38)	18%	45%	11%	26%
Hospital-Based (N=8)	25%	-	-	75%
Other (N=9)	44%	-	11%	44%

NOTE: Totals may not add to 100 percent due to rounding.

Of the eight motivations cited (See Table IV-3), the attributes of the particular specialty were perceived by respondents as the "most important" motivators in specialty choice. The patient contact associated with a specialty (82.7%) and the intellectual stimulation provided by a specialty (75.7%), were reported as the "most important" attributes in specialty choice, followed by encouragement of others who trained in the particular specialty (52.7%). As shown in research on factors in specialty choice presented in the previous section, the demand for a specialty or the income potential associated with a specialty were perceived as "very important" or "important" less frequently.

The three factors recognized as "important" by USFMGs were also selected in this order when USFMGs were asked to identify the single most important factor determining their specialty choice: 34.3% identified the intellectual stimulation generated by a specialty, 31.1% cited the patient contact aspect, and 9% referred to the encouragement provided by others who trained in the specialty as the most important motivators.

Factors involved in specialty choice were also compared across the four specialty categories. The four factors that emerged for all USFMGs as the most important motivators of specialty choice also emerged as highly important for each of the specialty categories. The order of importance associated with each of these factors was identical for the primary care, surgical and "other specialties" categories. This order, however, differed for physicians in the hospital-based specialties. For this group of physicians, the intellectual stimulation induced by a specialty was seen as the most important factor in specialty choice (this factor was ranked second by the other groups). The second most important factor was the encouragement of others who trained in the same specialty (ranked third by physicians in the other specialty categories). Moreover, patient contact was perceived by significantly fewer USFMGs in hospital-based specialties as an important specialty choice factor than by USFMGs in the other specialty categories.* The third most important factor was the patient-contact attributes of a specialty (ranked as the most important factor by physicians in the other specialties). Income potential, which was not perceived as an important factor in specialty choice, was perceived as "not at all important" by significantly more USFMGs in primary-care specialties than by USFMGs in other group specialties.**

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*x^2 = 69.401, 3d·f·, p. = .0001

**x^2 = 18.427, 3d·f·, p = .0004

Table IV-3

Factors in Selecting Specialty
(N=463)

	Very Important	Important	Fairly Important	Not At All Important
Encouragement from others who trained in this specialty	23.1%	29.6%	18.6%	27.2%
Encouragement from chief of medicine during clinical training	6.0%	17.1%	16.4%	58.3%
Encouragement from other medical faculty during clinical training	7.6%	26.8%	25.9%	37.4%
Specialty is more intellectually stimulating than other specialties	41.0%	34.1%	15.3%	7.3%
Enjoy the patient contact associated with this specialty	55.6%	27.2%	9.5%	6.0%
Demand for physicians in this specialty	14.7%	23.3%	26.1%	33.7%
Income potential of specialty	3.9%	18.1%	32.0%	43.6%
Specialty is most appropriate for practice in rural area	7.8%	8.7%	15.6%	64.5%

NOTE: Totals do not add to 100 percent as not all respondents answered this question completely.

4.7 Specialty Board Certification

Statistics on the rate of specialty board certification for U.S. trained physicians (USMGs) indicate that graduating medical students became more aware in the 1970s of the desirability of such certification. Specialty board certification is increasingly seen as necessary for obtaining hospital privileges, academic appointments, and medical society memberships. The need for becoming specialty board certified was most evident in hospital-based specialties such as pathology, surgery, and obstetrics/gynecology.

Obtaining specialty board certification is, however, a slow process. In a longitudinal tracking study by Leavitt and Holden(22) of U.S. medical school graduates, most U.S. medical graduates (81%) in 1960, 1964, and 1968 undertook the process of specialty board certification. By 1976, approximately two-thirds of these graduates were specialty board certified.

Consistent with these statistics are data reported by surveyed USFMGs. Slightly over one-third of the respondent USFMGs (n=168; 36.3%) and nearly one-half of the USFMGs with medical practices (47.9%) have specialty board certification. The majority of the specialty board certified USFMGs (87%) obtained their certification between 1968 and 1982. Most obtained their certification (90.5%) after taking the specialty board examination once.

The rate of specialty board certification varied by specialty category. USFMG physicians in the surgical (35%) and hospital-based (30%) specialties were less likely to have specialty board certification during their initial practice than primary-care (50%) physicians. Physicians in "other" specialties, many of which require hospital privileges, had the highest specialty board certification rate (67%).

4.8 Medical Specialty and Practice Location Characteristics

Medical specialty--primary care, surgical specialties, hospital-based and other specialties--differentiated little among initial practice type and practice location characteristics. USFMGs in all specialty categories tended to locate their initial practice in communities ranging widely in size, type (urban, suburban, rural), and geographic region. As expected, office-based practice was most common to the primary care, other, and surgical specialties. Only 25% of USFMGs with hospital-based specialties maintained office practice outside the hospital. USFMGs in hospital-based specialties tended, however, to engage more frequently in non-patient medical activities such as teaching (45%) and research (10%). These professional activities were less common in the other three specialty groups. Solo practice was most prevalent (58%) for physicians in "other" specialty categories, while a two-person partnership was most common in surgical specialties (25%).

Physicians in hospital-based and other specialties tended more often to have patients with lower socio-economic characteristics (over 80%) and minority background (65%) than USFMGs in the primary-care and surgical specialties.

Physician state relocation patterns were similar for three of the four specialty categories: primary care, surgical, and other specialties. Physicians in hospital-based specialties exhibited a higher rate of state relocation. Only one-quarter of hospital-based physicians located their initial practice in their home state, and only 10% located their practice in the state in which they went to college. On the other hand, 60% of the physicians in this group remained to practice in the state in which they had received their graduate medical training.

The state in which graduate medical training was obtained also was the most important determinant of the initial practice location for the other specialty categories. However, home state and college state were also significant indicators of physicians' initial practice location.

Only 60 USFMGs were currently located in an area different from their initial practice location. One-half of these physicians were in primary care specialties. The second half were distributed among surgical, hospital-based and other specialties. Relocated physicians were aggregated, for analytic purposes, into two specialty categories: "primary care" and "all other." Given the small number of physicians in each of the two specialty categories, comparisons along the variables used in the above analyses did not yield meaningful results.

4.9 Multivariate Analysis of Specialty Choice

To supplement the descriptive analysis of factors influencing USFMGs' specialty choice, a multivariate approach to the analysis was employed. This approach permitted the simultaneous evaluation of several apparently influential factors, to determine if each remained significant when the others were taken into account. Ideally, this technique will distinguish, from among all of these factors, those that are of paramount importance in influencing specialty choice.

The specific approach used to analyze the survey data was logit analysis, a technique that is appropriate when the outcome measure (or dependent variable of interest) is a binary choice rather than a continuous measure. The logit model, as described by Pindyck and Rubenfeld (1977), expresses the probability that an individual will make a given decision as a function of several explanatory variables. In mathematical form, the model is as follows:

$$P_i = \frac{1}{1 + e^{-(\alpha + \beta X_i)}}$$

where P_i = the probability of making the given decision

X_i = a vector of factors influencing that probability

β = the vector of coefficients associated with the explanatory variables X_i

α = the constant term.

(The symbol e is the base of natural logarithms.)

The above equation can be reworked algebraically to develop an equation that can more readily be estimated and interpreted. That form is shown below:

$$\ln\left(\frac{P_i}{1-P_i}\right) = \alpha + \beta X_i$$

This equation indicates that the natural logarithm of the probability of making a given choice, P_i, is a function of a series of explanatory variables, X_i. The coefficient (β) associated with each explanatory variable thus represents the incremental effect of that variable on the dependent variable, which is expressed as the logarithm of probability.

In this analysis, the outcome of interest was the decision on the part of USFMGs to enter primary care or non-primary-care specialties. That decision was structured as a binary choice before a logit analysis was performed, due to an insufficient number of observations within the other specialty categories. That is, the choice of a primary care specialty was structured as the result of a choice between primary care and a non-primary care specialty, where non-primary care included surgical, hospital-based, and other specialties.

While it was the most appropriate method to use for this investigation, logit analysis incorporates several limitations that should be noted before the detailed methods and results are presented. The most restrictive of these is the requirement that a "sufficient" number of observations be available for each variable included in the analysis. If a sufficient number is not available, the resulting estimates will be unreliable. Because of the number and distribution of USFMG respondents, it was often necessary to collapse small categories of responses into broader ones, in order to attain adequate numbers of observations. For example, medical school location was measured in this analysis in terms of three clusters of countries--Mexico, Western Europe, and other--because there were too few observations within more refined breakdowns. This, of course, means that detailed evaluation of very specific relationships is not supported by this sample.

The general model of USFMGs' specialty choice was derived from the medical education and practice continuum, described earlier. The model posits that USFMGs are faced with a common sequence of decisions at key points in their careers, beginning with enrollment in a foreign medical school and terminating with medical practice in the U.S. Among the decisions made by USFMGs are those regarding specialty of practice, and, ultimately, practice location.

An underlying assumption of this analysis, which is based upon a considerable body of research, is that USFMGs generally make a commitment to a particular medical specialty either late in their undergraduate medical training or early in their internship or residency programs. Furthermore, it is likely that the choice of a specialty precedes the selection of a practice function (i.e., patient care or other type of activity) and of a practice location. While it is possible that the physician considers his/her practice location at the same time he/she is making a commitment to a practice specialty, the literature does not strongly support the construction of a simultaneous model of specialty and location choice.

The general model of physicians' choice of practice specialty is summarized in the following equation:

$$\text{SPECIALTY} = f(\text{DEMOG, FAMILY, ABILITY, MEDEDUC, TIME}).$$

The explanatory variables, selected from among those identified in a review of the literature, are defined in the following way:

DEMOG = sociodemographic characteristics of the physician, evaluated at a particular point in the education-practice continuum. These include age, sex, marital status, and number of children

FAMILY = measures of family socioeconomic status during physician's childhood (e.g., father's occupation, type of home community)

ABILITY = measures of the physician's ability (e.g., college grade-point average, MCAT scores)

MEDEDUC = characteristics of the foreign medical school attended (e.g., location of school, how medical education was financed)

TIME = indicator that the physician graduated after PL 94-484 was implemented in 1976

Preliminary analysis revealed that several of the above categories of measures were unimportant for the sample of USFMG respondents. Demographic characteristics were not significant, largely because of the relative homogeneity of this group with respect to age, race, sex, and marital status. For the same reason, the indicator TIME did not prove to distinguish significantly different patterns of behavior. Consequently, the final specialty choice model omitted both categories of measures. However, one or more measures representative of the remaining categories were included in the model. Selection of specific variables was governed by the results of previous research and evaluation of the reliability of questionnaire responses.

Seven variables were included in the logit analysis of USFMGs' specialty choice. Indicators of the physician's family background consisted of a binary indicator of whether the physician's father was also a doctor (MDFATHER) and the type of community in which the physician was raised (RURCOMM, URBCOMM). Academic ability was measured by an indicator of college GPA (COLLGPA), which appeared to be more consistently and reliably reported than other measures of ability. Finally, characteristics of the USFMG's medical education included indicators of participation in the Fifth Pathway program (FIFTHPWY), receipt of government financial aid (GOVTFIN), and medical school location (MEXICO). Exact definitions as well as descriptive statistics for these variables are provided in Table IV-4.

The specific logit model used in this analysis thus estimates the probability that a USFMG will choose a primary-care specialty (PRIMCARE), based on a series of personal and environmental characteristics. Fully specified, it is as follows:

$$\text{Probability of choosing primary care} = B_o + B_1 \text{ MDFATHER} + B_2 \text{ RURCOMM} + B_3 \text{ URBCOMM} + B_4 \text{ COLLGPA} + B_5 \text{ FIFTHPWY} + B_6 \text{ GOVTFIN} + B_7 \text{ MEXICO} + \varepsilon$$

where B_o is the constant term, B_1 through B_7 are the coefficients associated with each of the explanatory variables, and ε is a random-error term. Maximum likelihood techniques were used to derive the parameter estimates.

The results of the logit analysis are presented in Table IV-5. Coefficients are shown along with "t statistics" (that is, the ratios of the coefficients to the asymptotic error). The results clearly indicate that specialty choice is not predicted by the variables included in the model. The likelihood ratio did not reach conventional levels of significance, which indicates that the vector of coefficients (that is, the "Bs" described earlier) is not significantly different from zero. Only the coefficient associated with MDFATHER was statistically significant. Its negative value indicates that, all things equal, USFMGs with physician fathers were less likely to choose a primary-care specialty than those whose fathers had other occupations. This negative association between physician fathers and choice of primary-care specialty may arise for a number of personal and/or professional reasons. Because of the poor explanatory power of the overall model, however, this finding should not be regarded as conclusive.

Thus, for the USFMGs who completed the questionnaire, measures of family background, ability, and medical education were not important in influencing specialty choice. While this outcome may be the result of using relatively gross indicators as explanatory variables, one might appropriately conclude from this analysis that specialty choice is influenced by personal and/or environmental characteristics other than those identified during this analysis. This conclusion would be generally consistent with findings from previous research.

Table IV-4

Definitions of and Descriptive Statistics for, the Variables Used in the Logit Analysis of Specialty Choice

Variable Name	Definition	Mean	Standard Deviation
COLLGPA	College grade point average (out of 4.0) 1 = 3.0 or higher 0 = less than 3.0	0.34	0.47
FIFTHPWY	Whether physician participated in Fifth Pathway program 1 = did participate 0 = did not participate	0.52	0.50
GOVTFIN	Whether federal or state financial aid was received 1 = received government aid 0 = did not receive government aid	0.44	0.50
MDFATHER	1 = father was M.D. 0 = otherwise	0.19	0.39
MEXICO	1 = medical school located in Mexico 0 = elsewhere	0.53	0.50
OTHLOC	1 = medical school located in location other than Mexico or Western Europe 0 = otherwise	0.09	0.28
PRIMCARE	1 = physician is in primary-care specialty 0 = otherwise	0.67	0.47
RURCOMM	1 = home community in rural area 0 = elsewhere	0.12	0.33
SBRBCOMM	1 = home community in suburban 0 = elsewhere	0.42	0.49
URBCOMM	1 = home community in urban area 0 = elsewhere	0.46	0.50
WEUR	1 = medical school located in Western Europe 0 = elsewhere	0.38	0.49

Table IV-5

Results of Logit Analysis of Specialty Decisions (Primary Care or Non-Primary Care)

(Numbers in parentheses are asymptotic t-statistics)

Independent Variable	Dependent Variable: Probability of Primary-Care Specialty (PRIMCARE)
Constant	-0.55* (2.29)
URBCOMM	-0.01 (0.05)
RURCOMM	0.05 (0.23)
GOVTFIN	0.07 (0.50)
WEUR	0.13 (0.64)
FIFTHPWY	0.03 (0.17)
MDFATHER	-0.43* (2.63)
COLLGPA	-0.12 (0.08)
χ^2 for likelihood ratio	59.74

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*Indicates significance at .05 level.

Chapter IV: Footnotes

1. See, for example, Hadley (1977), Matteson and Smith (1977), Monk and Thomas (1973), Paiva and Haley (1971), and Watson and Croft (1978).

2. See, for example, Anderson (1973), Cuca (1979), Davidson (1979), and Weil and Schleiter (1981).

3. See Davidson (1979), Long (1980), and Weil and Schleiter (1981).

4. Among these was Hadley (1977), Monk and Thomas (1973), and Watson and Croft (1978).

5. See Anderson (1975), Cuca (1979), Funkenstein (1979), Matteson and Smith (1977), and Paiva and Haley (1975).

6. Studies based upon data from a single school or hospital include Davidson (1979), Matteson and Smith (1977), Monk and Thomas (1973), and Watson and Croft (1978). Studies drawing upon nationwide data bases include Cuca (1979), Funkenstein (1979), Hadley (1977), and Weil and Schleiter (1981).

7. In his review of the literature on physician specialty choice, Hadley (1975, p. 57) also makes the point that "The most consistent results (across studies) are found for the demographic characteristics of choosers of general practice, with little agreement both for other specialties and for more attitudinal and proxy variables."

8. See, for example, Cuca (1979), Hadley (1977), Matteson and Smith (1977).

9. See Davidson (1979) and Matteson and Smith (1977). Hadley (1975) presents a brief review (pp. 58-59) of earlier research on this point. He presents findings that suggest that females are also more likely to select hospital-based specialties (anesthesiology, radiology, pathology) than office-based specialties.

10. Anderson (1975) showed that age-at-entry to medical school was among the ten most important predictor variables in a multiple discriminant analysis of interns' career choices.

11. See Hadley (1977), Monk and Thomas (1973), and Watson and Croft (1978), for examples.

12. See Hadley (1977), Paiva and Haley (1971), Watson and Croft (1978) and Weil and Schleiter (1981). Long (1980) presents results which suggest that the choice patterns of black residents are nearly identical to the choice patterns of all physicians certified by specialty boards.

13. See Paiva and Haley (1971) and Watson and Croft (1978). In Hadley's summary of early research (1975, p. 58), he indicated that general practitioners tended to have lower MCAT scores. However, this result is not unequivocally supported by later research efforts including Hadley (1977).

14. Several researchers infer the importance of the medical school experience in the physician's specialty choice process by noting the changes in preferred specialty reported by physicians as they progress through medical school. See, for example, Cuca (1979).

15. See Cuca (1979), p. 433.

16. The other three factors (in order of importance) were: first, opportunities for self-fulfillment; second, intellectual challenge of subject matter of specialty; and third, type of patient.

17. Weil and Schleiter used a four-category measure of medical school type, which ranked each medical school along the range from 1 (teaching and research admission preference) to 4 (primary-care admission criteria). In this analysis of factors explaining cross-section variation in residents' academic vs. practice career focus, MCAT-Science score was the most powerful predictor. Similarly, in the analysis of variation in residents' indicated intent to practice primary-care medicine, only "prerogatives of the job" was a more important variable than medical school type. The former measured the degree of importance of such things as control over working conditions, and financial opportunities in the choice of general internal medicine vs. those in a subspecialty.

18. See Long (1980), p. 414.

19. Funkenstein (1979, p. 78) also reported, "In none of the years of studying Harvard medical students, did alumni/ae or our national sample of students feel that anyone on the faculty had influenced their choice of career."

20. Among the structural variables that Hadley included in this analysis were:

    - indicator of private/public control
    - proportion of applicants accepted from out-of-state
    - expenditures per medical student
    - faculty per student
    - Ph.D. faculty per M.D. faculty
    - ratio of basic science to clinical faculty
    - research budget per full-time faculty
    - non-medical students per medical student
    - indicator that teaching hospital affiliated with medical school is a private, non-profit corporation

21. These interaction measures (in order of importance in the stepwise discriminant analysis) were: first, time in leisure activity (senior year); second, difficulty making friendships (during internship); fourth, importance of getting along with fellow students for getting the most out of freshman year; eighth, time spent discussing courses (freshman year). Of the six remaining factors in the top ten, three related to grades and class standing, one was related to age (year of birth). The two remaining were: importance of research ability in medical school success, and importance to physician of beginning his/her practice quickly (i.e., short medical training period.

22. Edithe J. Levit, M.D., and William D. Holden, M.D., "Specialty Board Certification Rates; A Longitudinal Tracking Study of U.S. Medical School Graduates," American Medical Association, Vol. 239, No. 5 (January 30, 1987), pp. 407, 412.

CHAPTER V. USFMG PRACTICE LOCATION

This chapter deals with the practice-location patterns and paths exhibited by surveyed USFMGs. The chapter includes six parts, each of which addresses different components of, and variables relevant to, physicians' practice locations.

The first part of the practice-location analysis includes a review of recent studies of physicians' location decisions. The second part describes the characteristics of surveyed USFMGs' initial, intermediate, and current practice locations. In the third and fourth parts of this section, the results of the macro-level location analysis conducted in this study are presented. The macro-level location analysis involves USFMG movement or lack of movement across states and within and across geographic regions during educational and career milestones. A micro-level location analysis follows. In this analysis, USFMGs' initial and current practice locations in urban, suburban, and rural areas is investigated, along with characteristics distinguishing urban and rural practices. This analysis is supplemented, in the fifth part of this section, by an examination of USFMG practice location paths in counties with shortage and non-shortage areas. The USFMG practice location analysis concludes with a multi-nomial logit practice-location choice model.

5.0 Literature Review

Recent studies of physician practice location decisions(1) have focussed on three issues (Kibbe, 1979): physicians' preferences regarding practice in urban or rural locations, determinants of observed cross-sectional variations in physician/population ratios, and explanations of the ability of cities or towns to attract additional physicians. As this USFMG study focussed on explaining why individual USFMGs may or may not choose to practice in rural versus urban (or shortage versus non-shortage) areas, the literature pertaining to the first of the three dimensions listed was the most germane to our study.

Based upon the synthesis of past research on physicians' practice-location decisions, five categories of factors that are significant predictors of location were identified. These are:

- prior residence of the physician
- physician specialty
- characteristics of the local medical care system
- the physician's socio-demographic characteristics
- aspects of the physician's undergraduate medical training

A review of the more recent (post-1976) literature on practice location reveals that many of the inferences regarding the relationship between the foregoing factors and practice location have been drawn from comparisons of the frequencies with which surveyed physicians have identified such factors.(2) What researchers typically report are the relative frequencies with which physicians practicing in urban and non-urban settings indicate that particular survey items were "important" in their decisions regarding practice location. Less frequently do we find in the literature multivariate statistical analyses of the relationship between observed practice locations and factors purported to influence the physician's location preferences. Therefore, while in the literature many factors appear to be associated significantly with individual physicians' decisions regarding their practice locations, the fact that most of these results were derived from simple comparisons of survey responses limits their usefulness. This study therefore supplemented the conventional descriptive analyses with multivariate analyses.

5.0.1 Prior Residence

Among the explanatory variables that researchers have employed in their investigations of physicians' locations, the physicians' historical residence patterns--from birth through medical school, internship, and residency--have been among the most statistically significant. Generally, the probability that a physician will locate his/her practice in a particular region increases with the number (and type) of past contacts with that region or one similar to it. In the case of the decision to locate in an urban versus rural area, researchers have found that having been reared in a rural area increases the likelihood that the physician will practice in such a region. Also, the probability of a physician practicing in a rural region is further increased if the physician's spouse was raised in a rural area. The state in which the physician received residency training has been shown to be an important variable in explaining the location of practice in a different state. While the location of residency training has been of limited utility in explaining intra-state practice-location patterns, Werner *et al.* (1978) had some success with a variable measurement of physicians' self-assessment of the importance of past contact (medical school, residency, or military training) in their decisions to locate practices in urban versus rural, or physician shortage versus non-shortage counties.

5.0.2 Physician Specialty

A consistent finding across many studies and reports in the health services research literature is the statistically significant relationship between a physician's practice specialty and preference regarding the practice location. The specialty-location relationship is consistently reported to be strong in studies of urban versus rural location, as well as in analyses of the choice of the state in which the practice is located. A review of the literature on physicians' practice locations (Health Resources Administration, 1974) contained overviews of several studies published during the early 1970s. Among the important findings of these studies, two deserve mention. First, it was found that primary care physicians tended to shun inner-city locations; most specialists tended to choose locations in central business districts or near hospitals. Primary-care physicians tended to locate in outlying census tracts and mainly provided service to nearby residents. Second, it was found that psychiatrists were the least likely--and specialists in anesthesiology, radiology, and pathology were the most likely--to set up practice in states where they had no prior contact.

More recent research efforts also corroborate the relationship between practice specialty and location. These recent works reaffirm the findings of earlier researchers, that physicians in primary-care specialties are more likely to locate their practices in rural (or physician-shortage) areas than are other kinds of specialists. Such findings may, of course, reflect the need of non-primary-care specialists for a large population base for generating an adequate patient stream and/or their need to be located near a major medical center containing the complex equipment needed for the practice of particular medical specialties.

5.0.3 Characteristics of the Local Medical Care System

Whenever practicing physicians are asked to identify the factors that were important in their decision as to practice location, several factors related to the medical care system in the chosen area are identified as being among the most important. Specifically, physicians report that proximity to a modern community hospital or medical center, and the ability to continue their medical education, are important factors in their practice-location decision. This is a relatively consistent finding across research studies and seems to hold true for physicians across all practice specialties. In addition, this finding is supported by the results of an econometric analysis of physicians' practice-location choices, as well as by a simple comparison of frequencies of responses to survey items.

5.0.4 Physician Socio-demographic Characteristics

Among the factors that researchers have attempted to correlate with physicians' practice-location decisions are particular socio-demographic characteristics of the physicians themselves. Interest seems to focus upon such attributes as age, marital status, and the presence of school-age children. The last attribute is frequently addressed in surveys that ask physicians to indicate whether the quality of the local school system was an important factor in the decision to locate in a particular community. Similarly, the importance of marital status is addressed in questions regarding the importance of spouse's preference in the decision to locate in a community. The significance of such socio-demographic attributes in studies of physicians' location decisions has varied.(3) While such attributes as age (or the number of years in practice), marital status (spouses' location preferences), or the presence of school-age children (quality of local schools) may have some effect upon the physicians' location preferences, they are not likely to be among the most important.

5.0.5 Physicians' Undergraduate Medical Training and Other Variables Related to Practice Location

Besides the four categories of variables previously discussed, other factors have been suggested by researchers as potentially significant determinants of physicians' practice locations. In some studies, researchers have attempted to determine whether particular characteristics of the medical training process affect location decisions. With respect to the urban versus rural location issue, prior experience with rural practice (such as through a preceptorship program) has been suggested as a potentially significant factor; however, the evidence supporting such an effect is weak, at best.

More recent studies, such as that by Cooper et al. (1975), report that the influence of preceptorship programs on the urban versus rural location decision is insignificant. Another attribute of medical training considered in this context by researchers is the public or private ownership of the medical school. The relationship between medical school ownership and practice location is often shown to be insignificant.(4) A final note with respect to this relationship is the finding of Parker and Sorenson (1978) that physicians who graduated from foreign schools (in the British Isles and non-Asian Commonwealth countries) consistently gave different answers to survey questions than other physicians, when indicating the importance of factors influencing their practice-location decision. However, since Parker and Sorenson did not report any multivariate analyses of physicians' location preferences, it is difficult to assess how strong an effect such foreign medical training had upon practice-location decisions--independent of the possibly confounding effects of other factors such as physician age, marital status, and the like.

Among the other factors purported to affect physician practice location preference is the income potential of the region. As Langwell (1980)(5) reports:

> General/family practitioners, surgeons, and other non-primary-care specialists can expect to earn higher lifetime incomes in non-rural areas. Primary-care specialists, other than general and family practitioners, appear to face economic incentives to choose a rural practice location.

Based upon such evidence, one might infer that some portion of the explanatory power of physician-specialty indicators in practice-location equations is due to the correlation between practice specialty and potential income levels in different geographic areas. One must, however, be cautious in assessing location decisions. In surveys of physician behavior, the "income potential" of practice in a region is not always among the variables most frequently identified by physicians as important factors in these decisions, nor is the region's income potential generally a significant variable in multivariate analyses of physician practice locations.(6)

Other explanatory variables in location analyses are: measures of the cultural amenities in a region; the opportunity for a physician to join in a group practice; and whether the physician borrowed money to finance his or her medical education under conditions whereby the principle to be paid will be reduced by some fraction for every year the physician practices in a rural area. While each of these variables is found to be associated significantly with physicians' decisions to practice in urban versus rural counties in some studies, the results are not consistently significant in the literature.(7)

5.1 USFMG Practice and Location

To examine the types of practices USFMGs have chosen and their locations, data were collected from 351 USFMGs who have completed their graduate medical training. Practice type and location data were divided into three categories: USFMGs' practice and location immediately following their completion of graduate medical education (identified hereafter as "initial" practice and location), current location and practice, and a summary of practices and locations selected between initial location and practice and current location practice--identified as "intermediate" practices and locations.

5.1.1 Initial practice and Location

Subsequent to completion of graduate medical training, USFMGs located in 40 states. The location pattern exhibited by USFMGs in their first practice phase closely resembled their geographic location during graduate medical training. Of the 40 states in which USFMGs located their first practice, New York (20.3%), California (14%) and New Jersey (11.7%), were most frequently chosen. Connecticut (5.4%), Florida (6.0%), Texas (5.1%), Pennsylvania (4.6%), Arizona (3.1%), and Ohio (3.1%), each served as locations for 10 or more USFMGs. Between 1 and 9 USFMGs established their first practice in each of the remaining 31 states.

Nearly three-fifths of the USFMG practicing physicians located their first practice in small- to medium-sized towns (10,000 to 250,000 population). One-fifth located their practice in large metropolitan areas (1,000,000 or more in population), and one-fifth practiced medicine in areas with 250,000 to 1,000,000 inhabitants. Seventeen percent of the practicing physicians located their first practice in rural areas. The remaining 84% tended to locate their practice more often in urban areas (45.1%) than in suburban areas (38.3%).

Physicians' practice location decisions constitute a well-researched area. To identify the major factors determining USFMGs' practice-location choice, this study uses the 23 factors reviewed in the previous section, which previous research has shown to be significant location determinants. The 23 factors used in the study (see Table V-1) were divided into five major categories:

- factors relating to professional opportunities available in the area
- factors relating to community characteristics
- factors relating to familial variables
- factors relating to personal preferences
- factors relating to familiarity with the area and community

The factors relating to the professional opportunities offered by the area were evaluated by USFMGs as most important. Availability of clinical support facilities and personnel was perceived by the highest percentage of USFMGs as a "very important" or "important" location determinant. Nearly four-fifths (77.1%) of the USFMG practicing physician sample regarded this factor as "very important" (37.4%) or "important" (39.7%). Similarly, opportunities for regular contact with other physicians (66.9%) and access to continuing medical education (66.9%) were assessed by the second largest percent of USFMGs as "important" location determinants. Also viewed as important by over three-fifths of the practicing physicians was the opportunity to join a desirable practice.

Indeed, the seven factors dealing with professional opportunities in the area of location were all rated among the 10 factors perceived as most important location determinants. Furthermore, the opportunity to join a desirable practice was selected by the largest percentage of USFMG practicing physicians (27.4%) as the single most important location determinant. None of the other 22 factors was reported by more than 9% of the practicing physicians as the single most important determinant of practice location.

Other factors evaluated by one-half or more of the USFMG practicing physicians as important location determinants were a mix of community, familial, and personal preference factors. These factors included in order of ranking frequency: preference for urban, suburban, or rural living (64%); quality of education system for children (60%); opportunities for social life (55.7%); cultural advantages of area (53.7%); climate or geographic features of area (51.7%); and income potential (51.7%).

Table V-1

Factors Determining First Practice Location
(N = 350)

	Very Impor- tant	Impor- tant	Fairly Impor- tant	Not at All Im- tant
Opportunity to join a desirable practice	43.4%	17.4%	7.4%	28.9%
Availability of clinical support facilities and personnel	37.4	39.7	13.7	7.1
Opportunity for regular contact with medical school and medical center	24.3	27.4	27.4	19.1
Opportunity for regular contact with other physicians	27.1	39.7	21.1	9.7
Hospital offers opportunity for private practice	24.3	26.0	15.4	30.0
Access to continuing education	29.0	38.0	21.0	9.0
Income potential	15.0	36.0	31.0	15.0
Community efforts to recruit physicians	6.0	11.0	14.0	66.0
Community acceptance of USFMGs	6.0	10.0	17.0	64.0
Availability of loans for beginning practice	3.0	9.0	8.0	76.0
Climate or geographic features of area	25.0	27.0	23.0	23.0
Preference for urban/suburban or rural living	28.0	36.0	20.0	13.0
Availability of recreational and sports facilities in area	14.0	28.0	31.0	25.0
Quality of education system for children	27.0	33.0	13.0	23.0
Opportunities for social life	17.0	39.0	27.0	15.0
Cultural advantages	19.0	35.0	30.0	13.0
Prosperity of community	10.0	35.0	30.0	21.0
Prospect of being more influential in community affairs	3.0	15.0	25.0	52.0
Influence of spouse	19.0	27.0	21.0	29.0
Influence of family and friends	12.0	18.0	24.0	42.0
Having been brought up in such a community	12.0	15.0	15.0	55.0
Having gone to college in area	3.0	6.0	7.0	80.0
Having gone through graduate training or military service in area	9.0	15.0	8.0	62.0

NOTE: Totals do not add to 100 percent as not all respondents answered this question completely.

Factors perceived by the smallest number of USFMGs as important included: availability of loans for beginning practice in area (11.7%), community acceptance of USFMGs (16%), community efforts to recruit physicians (17.1%), and prospect of being more influential in community affairs (18%). Similarly, factors dealing with familial or social influence to locate in area or previous familiarity with the area were perceived as being of relatively minor importance. These factors were also perceived by a majority of USFMGs as "not at all important" in determining practice location. For example, between 55% and 80% of USFMG practicing physicians rated factors concerning previous familiarity with area as "not at all important". A majority (64% to 76%) also rated as "not at all important" community efforts to recruit physicians, community acceptance of USFMGs, and availability of loans for beginning practice in area.

Over three-quarters of sampled USFMG practicing physicians (78%) had not changed their initial practice in 1982, when the study was conducted. A greater majority (85.1%) had remained in the same community in which their initial practice was located. On the average, USFMG practicing physicians had maintained their initial practice for 2.35 years. Nearly two-fifths (39.4%) had had their first practice for one year; over one-fifth (22.3%) reported having had their initial practice for two years; and under one-fifth (15%) had maintained their first practice for three years. Approximately one-quarter (23.4%) had maintained their first practice for four to eleven years.

The apparent inconsistency between duration of initial practice and the fact that the overwhelming majority of USFMG practicing physicians had remained, at the time this study was conducted, in their initial practice, can be explained by the fact that most USFMGs who graduated from foreign medical schools between 1970 and 1979 have been in practice for a relatively short time.

As expected, the majority of USFMGs were in patient-care types of practice (77%). Approximately three-quarters (72%) of the USFMG practicing physicians had an office-based practice. Approximately one-third (31.7%) classified their practice as hospital-based. Of the various patient-care practices, USFMG physicians most frequently had a solo practice (39%), or a (not prepaid) group practice (21%). Other forms of practice reported included, in order of frequency, a two-person partnership (16%), a prepaid group practice (8%), and an informal association (8%).

The ethnic and socioeconomic composition of the patient population treated by USFMG physicians was representative of the urban-suburban location of USFMGs. A majority of USFMGs (88%) had Caucasian patients. Nearly one-fifth (19.1%) treated Hispanic people, and 17.1% reported having black patients. The socioeconomic background of patients ranged widely: one-fifth of the USFMGs reported the socioeconomic background of their patient population as "lower-class;" two-thirds identified their patients as "middle-class;" and one-third stated their patients have an "upper-middle-class" socioeconomic background.

USFMGs not involved in patient care were divided among medical teaching (n = 51, 15%), research (n = 18, 5%), and administration (n = 12, 3%).

Most USFMGs earned between $25,000 and $75,000 annually, the average salary being $63,833. Slightly over 10% of surveyed physicians reported an annual income of $100,000 or over. The relatively low annual income reported by USFMG physicians, in comparison with the income distribution of U.S. physicians, can in large part be attributed to the recency of their medical practice.

As shown in Tables V-2 and V-3, USFMG annual income differed by practice location and by specialty category. USFMGs who located their practice in rural communities reported the highest annual income on the average ($66,732). USFMGs practicing in urban areas had a mean annual income of $64,430, while the lowest average annual income of $60,336 was reported by USFMG physicians with suburban practices.

As expected, USFMG practicing physicians in surgical specialties had significantly higher annual incomes ($77,941) than USFMG physicians in any of the other three specialty categories. The second highest annual income was reported by USFMGs in the hospital-based specialties ($65,278), followed by primary-care physicians ($60,253) and USFMGs in the "other specialties" category ($57,870).*

5.1.2 Current Practice and Location

Eighty-five percent of the USFMG practicing physicians have remained in the community of their initial practice and 78% have maintained their initial practice. Current practice differed from initial practice only for 60 USFMG practicing physicians. This section of the analysis will deal with the latter group of physicians.

The physicians who reported changing their initial practice location, are currently located in 20 states. The largest concentrations of this group are in California (n = 13, 22%), New York (n = 9, 15%), and Florida (n = 7, 12%). Over one-half of the USFMGs who changed their practice location (n = 33, 55%) moved to their current location between 1979 and 1982. Approximately one-half (48%) located their current practices in small- to medium-sized towns, and over one-quarter (28%) located in large metropolitan areas with populations of 1,000,000 or more. As in their initial practice, about one-half practice in urban areas, 38% in suburban communities, and 13% have rural practices.

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*$x^2 = 17.471$, 6d·f·, $p = .008$

Table V-2

Income Distribution for Initial Practice by Specialty Category

	Specialty Category			
Level of Income	Primary Care (N = 217)	Surgical (N = 51)	Hospital Based (N = 27)	Other (N = 27)
Less than $25,000	10 (4.6%)	3 (5.9%)	3 (11.1%)	4 (14.8%)
25,000 to 49,999	91 (41.9%)	9 (17.6%)	7 (25.9%)	11 (40.7%)
50,000 to 74,999	64 (29.5%)	16 (31.4%)	8 (29.6%)	6 (22.2%)
75,000 to 99,999	32 (14.7%)	10 (19.6%)	6 (22.2%)	2 (7.4%)
100,000 to 124,999	9 (4.1%)	5 (9.8%)	1 (3.7%)	2 (7.4%)
125,000 to 149,999	4 (1.8%)	6 (11.8%)	1 (3.7%)	2 (7.4%)
150,000 or more	7 (3.2%)	2 (3.9%)	1 (3.7%)	-
	$\bar{x} = \$60{,}253$	$\bar{x} = \$77{,}941$	$\bar{x} = \$65{,}278$	$\bar{x} = \$57{,}870$

NOTE: Totals do not add to 100 percent due to rounding.

Table V-3

Income Distribution for Initial Practice by Type of Practice Location

	Type of Community		
Level of Income	Urban (N = 149)	Suburban (N = 116)	Rural (N = 56)
Less than $25,000	11 (7.4%)	4 (3.4%)	5 (8.9%)
25,000 to 49,999	53 (35.6%)	49 (42.2%)	15 (26.8%)
50,000 to 74,999	41 (27.5%)	34 (29.3%)	19 (33.9%)
75,000 to 99,999	24 (16.1%)	18 (15.5%)	8 (14.3%)
100,000 to 124,999	6 (4.0%)	7 (6.0%)	4 (7.1%)
125,000 to 149,999	8 (5.4%)	2 (1.7%)	3 (5.4%)
150,000 or more	6 (4.0%)	2 (1.7%)	2 (3.6%)
	$\bar{x}$ = $64,430	$\bar{x}$ = $60,336	$\bar{x}$ = $66,732

NOTE: Totals do not add to 100 percent due to rounding.

In reviewing factors that motivated USFMGs to change their practice location, the professional opportunities offered by an area emerged as predominant factors, as shown in Table V-4. The availability for regular contact with other physicians, the opportunity to join a desirable practice, and access to continuing medical education emerged among the top six factors.

Preference for urban, rural, or suburban living also emerged among the top five factors, as in the case of initial practice location choice. However, "income potential" was rated as a more important factor in the decision to change practice location than it was in the initial practice location decision. Income potential was the second most highly rated factor.

The single most important factor in determining practice relocation was identified as "the opportunity to join a desirable practice." This factor also emerged as the single most influential factor in the initial location decision.

Patient-care types of practice were predominant in this group. Two-thirds (n = 40) of the physicians who relocated had office-based practices. One-third (n = 20) had hospital-based practices. In addition, eight of the physicians also engaged in medical teaching.

The types of practice reported by this group of physicians resembled the practice-type distribution of the practicing physicians group as a whole. Most prevalent were the solo-practice type (n = 19, 37%), and the (not prepaid) group practice type (n = 11, 21%). Other forms of practice reported included, in order of frequency, a two-person partnership (15%), informal association (8%), and a prepaid group practice (6%).

Physicians who relocated treated a patient population that varied ethnically as well as socioeconomically. The composition of the patient population did not differ after relocation. Thus, overall USFMG practice-location characteristics resembled the characteristics of the initial practice-location choice.

5.1.3 Intermediate Location and Practice

Among the sample of USFMGs who graduated from foreign medical schools between 1970 and 1979, 83% of the practicing physicians have maintained their initial practice location, 17% have relocated once and only 3% (n = 11) have changed their practice location more than twice. For this population of physicians, in 10 out of 11 cases, only one additional relocation move had been made.

Table V-4

Factors in Deciding to Change Practice Location
(N = 60)*

	Very Important (N)	Important (N)	Fairly Important (N)	Not at All Important (N)
Opportunity to join a desirable practice	22	9	6	14
Availability of clinical support facilities and personnel	19	19	9	3
Opportunity for regular contact with medical school and medical center	12	14	13	11
Opportunity for regular contact with other physicians	13	20	11	7
Hospital offers opportunity for private practice	12	11	8	20
Access to continuing education	10	20	12	7
Income potential	12	22	11	6
Community efforts to recruit physicians	5	6	2	37
Community acceptance of USFMGs	2	4	5	39
Availability of loans for beginning practice	2	2	5	41
Climate or geographic features of area	15	11	11	14
Preference for urban, suburban, or rural living	13	19	9	10
Availability of recreational and sports facilities in area	6	17	13	14
Quality of education for children	14	11	7	18
Opportunities for social life	10	15	13	12
Cultural advantages	11	15	13	11
Prosperity of community	7	16	14	14
Prospect of being more influential in community affairs	1	4	11	34
Influence of spouse	7	13	6	25
Influence of family and friends	7	10	6	28
Having been brought up in such a community	3	7	4	36
Having gone to college in area	2	7	41	11
Having gone through graduate training or military service in area	3	3	5	39

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*Table does not include percent data because of the small sample size.

NOTE: Totals do not add to 60 as not all respondents answered this question completely.

5.1.4 Residents' Location and Practice Plans

Seventy residents provided information about their location and practice plans.* Residents' location plans varied greatly: 40% of the residents reported that their location plans were uncertain at this point in their residency training, over one-quarter (29%) planned to locate in a different state, and the remaining 30% claimed that they would stay in the same state. Most residents (61.4%) planned to practice in a suburban setting. Plans for practicing in an urban or rural setting were expressed by fewer respondents (20% and 13%, respectively).

As with USFMG practicing physicians, most residents (85.7%) chose patient-care practice types. Also similar to the practicing physician population, nearly twice as many USFMG residents planned to have an office-based practice (55.7%) than a hospital-based practice (30%). Non-patient care areas such as medical teaching or research were chosen only by 14.3% of the residents.

In selecting their practice location, USFMG residents considered a variety of factors. The factors were identified through previous practice-location research. Surveyed USFMG residents were asked to evaluate 12 factors in terms of their importance to practice-location decisions. The factors included professional, familial, social, and economic determinants. The factors that USFMG residents perceived as "very important" were a mix of familial and professional considerations. Over one-half of the residents rated "educational opportunities for children" as the most important location determinant. This determinant was followed by two professional determinants: "availability of hospital appointments" (47.1%) and "openings in specialty" (40%). All other factors were perceived as "very important" by one-third or fewer of the residents (see Table V-5).

When residents' "very important" and "important" rankings were combined, another factor emerged as important. This factor, "cultural and social opportunities available in area," was rated by 85.3% of residents as "important" in selecting their practice location.

Familiarity with a location (either through growing up in a specific area or living there while in school) was considered least important among the location-decision factors. Factors dealing with familiarity with an area were also considered "not important" in selecting a practice location by the USFMG practicing physicians population.

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*Information on practice and location plans were provided by 70 USFMGs who received Resident Questionnaires.

Table V-5

Factors Involved in Practice Location Selection
(N = 70)

	Very Important		Important		Fairly Important		Not At All Important	
	N	%	N	%	N	%	N	%
General economic conditions in area	13	18.6	34	48.6	19	27.1	4	5.7
Cultural and social opportunities	20	28.6	39	55.7	10	14.3	1	1.4
Educational opportunities for children	36	51.4	23	32.9	7	10.0	3	4.3
Availability of hospital appointments	33	47.1	25	35.7	10	14.3	2	2.9
Preference of spouse	15	21.4	27	38.6	13	18.6	11	15.7
Openings in specialty	29	41.4	24	34.3	16	22.9	1	1.4
Area's need for a physician	24	34.3	31	44.3	12	17.1	3	4.3
Opportunity to join other physician or group	14	20.0	25	35.7	17	24.3	14	20.0
Born or raised in area	7	10.0	8	11.4	13	18.6	42	60.0
Place of residency	5	7.1	6	9.6	21	30.0	38	54.3
Medical school appointment	4	5.7	12	17.1	16	22.9	38	54.3
Income potential	7	10.0	29	41.4	25	35.7	9	12.9

NOTE: Totals do not always add to N or to 100 percent as not all respondents answered this question completely.

5.2 USFMG Movement Within and Across States

To track USFMGs' movements within and across states, data were collected about USFMG state residence during various milestones in their lives (see Figure II). Specifically, the USFMGs surveyed were asked to identify the state in which:

- they had lived for the longest period before they went to college
- they went to college or university
- they received clinical training while they were students in a foreign medical school
- they received clinical training as part of their participation in the Fifth Pathway program
- they received graduate medical training
- they set up their initial practice location
- they set up their current practice location (if different from initial practice location).

Three types of analyses were conducted to determine the state location patterns of USFMGs. First, a state-location pattern analysis was undertaken for all USFMGs, both residents and practicing physicians. This analysis was done for the five state location milestones that applied to residents as well as to practicing physicians (i.e., the state-location path followed from the state in which a USFMG had grown up to the state in which he/she received graduate medical training). The second state-location analysis involved USFMG residents only. This analysis encompassed the mapping of residents' movements from the state in which they had grown up through the state in which they received their graduate medical training, as well as through their planned state of initial practice. The third state-location analysis involved only USFMG practicing physicians. For this population, the analysis encompassed the entire range of state-movement milestones from the state in which a USFMG had grown up to the state in which a USFMG's current practice was located. In addition to these state location analyses, attention was given within each analysis to the strength of the relationship between sequences of milestones.

The tendency of physicians to practice in the state in which they grew up, went to college, attended medical school, or went through their graduate medical training has been of continuing interest to health manpower researchers. The tendency to remain in the same state throughout the education and training process is also evident among USFMGs. As shown in Table V-6, 60% of surveyed

Figure.II

USFMG State Location Paths

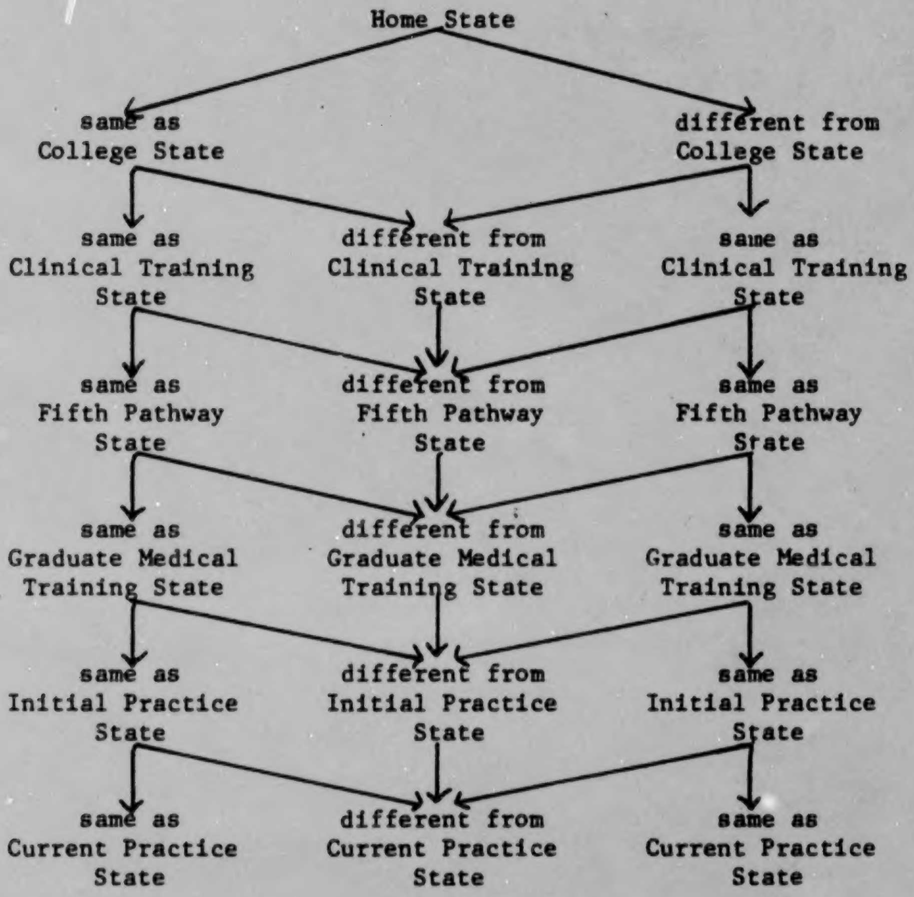
Home State
same as College State
different from College State
same as Clinical Training State
different from Clinical Training State
same as Clinical Training State
same as Fifth Pathway State
different from Fifth Pathway State
same as Fifth Pathway State
same as Graduate Medical Training State
different from Graduate Medical Training State
same as Graduate Medical Training State
same as Initial Practice State
different from Initial Practice State
same as Initial Practice State
same as Current Practice State
different from Current Practice State
same as Current Practice State

Table V-6

USFMG Residents' and Practicing Physicians' State Location Paths

Same as:	Home State	College State	Clinical Training State	Fifth Pathway State	Graduate Medical Training State
Home State (N = 463)	-				
College State (N = 463)	277 59.8%	-			
Clinical Training State while in Foreign Medical School (N = 371)	251 67.7%	187 50.4%	-		
Fifth Pathway Clinical Training State (N = 243)	133 54.7%	90 37.0%	124 51.0%	-	
Graduate Medical Training State (N = 463)	217 46.9%	155 33.5%	193 41.7%	124 26.8%	-

USFMGs attended college in the state in which they grew up. Of the USFMGs who participated in clinical training programs during their foreign medical education, two-thirds received training in U.S. hospitals located in their home state. Similarly, over one-half of the USFMGs who took part in the Fifth Pathway program did so in their home state. Nearly one-half of the surveyed USFMGs (46.9%) also went to graduate medical training programs located in their home state.* Over one-half of the USFMGs who obtained clinical training in U.S. hospitals during their foreign medical studies (N = 371) and who participated in the Fifth Pathway Program (N = 243) chose graduate medical training programs located in their respective clinical training and Fifth Pathway states.

A similar pattern also emerged in surveyed USFMG residents' state-location paths (see Table V-7). For a considerable number of residents, the state in which they grew up was the same location for their college, clinical training, Fifth Pathway training, and graduate medical training. Over sixty percent of USFMG residents (61.5%) went to college in the state in which they had grown up. Nearly two-thirds (65.1%) participated in a Fifth Pathway Program located in the state in which they were brought up. Similarly, the residents' home state and the state in which their graduate medical training program was located was the same for 40% of the residents. Over one-half of the residents who obtained clinical training in U.S. hospitals while still in foreign medical school, and those who participated in the Fifth Pathway program, obtained graduate medical training in their respective clinical training and Fifth Pathway states.

Unlike USFMG practicing physicians, residents' choices for initial-practice location were nearly independent of their state-location path from childhood to graduate medical training. Of the various locations planned by residents for establishing their initial practice, only 4% to 9.2% planned to remain in their home, college, clinical training, or Fifth Pathway program state. The state in which residents received their graduate medical training served as the best initial practice-location "predictor": approximately one-fifth of the residents planned to establish their practice in the state in which they received their graduate medical training.

The state in which USFMGs received their graduate medical education served as the state in which USFMGs were likely to locate their initial practice for over one-half of the USFMG practicing physician sample (see Table V-8). Practicing physicians were more likely to establish their medical practice in the state of their graduate medical training (34.2%) than in their home state (43%), clinical training state (34.2%), college state (29.4%), or Fifth Pathway training program state (19.2%).

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*Approximately 30% of USFMGs grew up, went to college, and received their graduate medical training in the same state.

Table V-7

USFMG Residents' State Location Paths

Same as:	Home State	College State	Clinical Training State	Fifth Pathway State	Graduate Medical Training State	Planned Initial Practice State
Home State (N = 109)	-					
College State (N = 109)	67 61.5%	-				
Clinical Training State while in Foreign Medical School (N = 83)	52 62.7%	41 49.4%	-			
Fifth Pathway Clinical Training State (N = 63)	41 65.1%	25 39.7%	38 60.3%	-		
Graduate Medical Training State (N = 109)	43 39.4%	28 25.7%	44 40.4%	32 29.4%	-	
Planned Initial Practice State (N = 109)	10 9.2%	4 3.7%	9 8.3%	6 5.5%	21 19.3%	-

Table V-8

USFMG Practicing Physicians' State-Location Paths

Same as:	Home State	College State	Clinical Training State	Fifth Pathway State	Graduate Medical Training State	Initial Practice State	Current Practice State
Home State (N = 354)	-						
College State (N = 354)	210 59.3%	-					
Clinical Training State While in Foreign Medical School (N = 288)	199 69.1%	146 50.7%	-				
Fifth Pathway Clinical Training State (N = 354)	92 26.0%	65 18.4%	86 24.3%	-			
Graduate Medical Training State (N = 354)	174 49.2%	127 35.9%	149 42.1%	92 26.0%	-		
Initial Practice State (N = 354)	152 42.9%	104 29.4%	121 34.2%	68 19.2%	181 51.1%	-	
Current Practice State (N = 60)	31 51.7%	22 36.7%	60 100.0%	4 6.7%	23 38.3%	40 66.7%	-

While a large percentage of USFMG practicing physicians tended to remain in their home state in order to attend college, obtain clinical training, or participate in a graduate medical training program, fewer USFMGs tended to establish their initial or subsequent practices in that state. Only 15.2% of the USFMG practicing physicians actually remained in the same state throughout their education (college and graduate medical training) and into initial or subsequent practice.

Physicians who relocated their practice tended, in all cases, to relocate in the state in which they had received clinical training while attending foreign medical school. Only eight USFMGs remained in the same state from childhood throughout medical training and practice relocation.

Previous research studies found that home state and medical school state were the most significant indicators of practice location. Since USFMGs did not obtain their medical education in the United States, clinical training in a U.S. hospital (which, in most cases, was arranged by the USFMG himself/herself) served as an important factor in determining eventual location. As previously observed, the majority of USFMGs who participated in clinical training programs in U.S. hospitals during their foreign medical education, elected to participate in programs located in their home state. These clinical training programs accounted more frequently for initial and subsequent practice-location choices than did Fifth Pathway programs in which USFMGs participated. Among the various location milestones, the location of the Fifth Pathway programs was least frequently a basis for practice-location decisions. Initial practice location was most frequently affected by the location of the graduate medical training program. Subsequent practice location was most frequently affected by the location of the clinical training program, as well as by the physician's initial practice location.

5.3 Regional Analysis*

The purpose of the regional analysis was to determine the extent to which USFMGs tend to remain during educational and professional milestones in the geographic region in which they had grown up. In particular, the analysis asked, to what extent do USFMGs tend to establish their medical practices in or out of their "home" geographic region? As previously mentioned, location analyses have important implications for health manpower distribution/maldistribution issues.

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*The definition of "region" used in this analysis is consistent with the DHHS definition.

The educational and professional milestones used in the regional analysis were identical to those used in the state-location analysis. As before, three analyses were conducted: regional analysis for both residents and practicing physicians, regional analysis for USFMG practicing physicians, and analysis for those practicing physicians whose current practice location differs from their initial practice location. As shown in Tables V-9, V-10, and V-11, the educational and professional milestones continuum used in each analysis varied.

Since regional location is a broader unit of analysis than state location, it was hypothesized that a larger percentage of USFMGs would stay in their home region than in their home state. In all cases, this hypothesis was confirmed. On the average, approximately 10% of USFMGs who did not stay in their home state, for each of the educational and professional milestones, tended to remain in the same region. For example, approximately 60% of surveyed USFMGs went to college in the state in which they had grown up; 86% went to a college located in the geographic region in which they had grown up.

The location pattern exhibited in the state analyses was replicated in the regional analysis. That is, the number of USFMGs remaining in their home state declined as USFMGs moved along the educational and professional continuum. Approximately two-thirds of USFMGs who participated in clinical training programs or Fifth Pathway programs chose graduate medical training programs in the same region. The same pattern and percentage was also evident among USFMG residents.

While the regional location of the graduate medical training programs was most commonly the same as the clinical training and Fifth Pathway program regional location, a different pattern was revealed for initial and subsequent practice locations. The regional location of USFMGs' initial practice was most frequently (60.5%) the same as the regional location of the graduate medical training program. About one-half of the USFMG practicing physicians who participated in the clinical training or Fifth Pathway programs chose to locate their initial practice in the region where these programs were located.

Practice location, on the other hand, was least commonly related to the regional location of the graduate medical training program. Nearly three-quarters of the USFMGs who relocated their practice did so in the same region as their initial practice. All relocations, however, did not cross the regional boundaries of the clinical training and Fifth Pathway programs' location.

Table V-9

Regional Movement of USFMG Residents and Practicing Physicians

Same as:	Home Region	College Region	Clinical Training Region	Fifth Pathway Region	Graduate Medical Training Region
Home Region (N = 463)	-				
College Region (N = 463)	399 86.2%	-			
Clinical Training Region (N = 371)	287 77.4%	238 64.2%	-		
Fifth Pathway Region (N = 243)	173 71.2%	140 57.6%	217 89.3%	-	
Graduate Medical Training Region (N = 463)	274 59.2%	217 46.9%	241 52.1%	163 35.2%	-

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Table V-10

Regional Movement of USFMG Residents

Same as:	Home Region	College Region	Clinical Training Region	Fifth Pathway Region	Graduate Medical Training Region
Home Region (N = 109)	-				
College Region (N = 109)	83 76.1%	-			
Clinical Training Region (N = 83)	66 79.5%	57 68.7%	-		
Fifth Pathway Region (N = 63)	55 87.3%	42 66.6%	63 100.0%	-	
Graduate Medical Training Region (N = 109)	57 52.3%	45 41.3%	57 52.3%	41 37.6%	-

Table V-11

Regional Movement of USFMG Practicing Physicians

Same as:	Home Region	College Region	Clinical Training Region	Fifth Pathway Region	Graduate Medical Training Region	Initial Practice Region	Current Practice Region
Home Region (N = 354)	-						
College Region (N = 354)	256 72.3%	-					
Clinical Training Region (N = 288)	221 76.7%	181 62.8%	-				
Fifth Pathway Region (N = 180)	118 65.6%	98 54.4%	150 83.3%	-			
Graduate Medical Training Region (N = 354)	217 61.3%	172 48.6%	184 52.0%	122 34.5%	-		
Initial Practice Region (N = 354)	187 52.8%	153 43.2%	156 44.1%	90 25.4%	214 60.5%	-	
Current Practice Region (N = 60)	37 61.7%	31 51.7%	60 100.0%	60 100.0%	28 46.7%	44 73.3%	-

5.4 Urban, Suburban, and Rural Practice Locations

USFMG location patterns were examined, at the micro-level, by the urban, suburban, or rural characteristics of the communities in which USFMGs grew up, and which they subsequently chose as their practice sites.

Mexico, Italy, and Western Europe constitute the three geographic areas in which most USFMGs received their medical education. Between 50% and 60% of the physicians in each of the urban/suburban/rural practice locations completed their medical education by 1975.

The majority of USFMG practicing physicians grew up in urban and suburban communities. Nearly one-half of the USFMG practicing physicians (47.4%) grew up in urban communities, over two-fifths had resided in suburban communities before they attended college (41.4%), and 10.8% had lived in rural areas. The urban, suburban, and rural initial-practice locations of USFMG practicing physicians were somewhat different from the type of communities in which they had grown up (see Table V-12). A larger percentage of USFMG practicing physicians located their initial practice in rural areas (16.6%). In fact, 10.8% of practicing physicians who grew up in urban areas, and 13.1% of those who grew up in suburban areas, chose to locate their practice in rural communities. On the other hand, USFMG practicing physicians who grew up in rural areas were as likely to establish medical practice in a rural area (52.6%) as to locate their initial practice in an urban or suburban area (47.4%). The tendency of USFMG practicing physicians to locate their practice in the same type of community in which they had grown up was similar among the three groups of physicians: 58.4% of USFMG practicing physicians who grew up in urban areas located their initial practice in urban areas; 51.7% of practicing physicians who were brought up in suburban communities established their first practice in such communities; and 52.6% of physicians with a rural background located their practice in a rural area.

USFMG practicing physicians who located their initial practice in urban, suburban, and rural communities differed in their specialty categories. Significantly more USFMG practicing physicians in patient care tended to locate their practice in suburban and rural areas than in urban areas.* Similarly, the proportion of USFMG primary-care physicians who established their initial practice in suburban areas (74.5%) was significantly higher than the distribution of USFMG physicians in these specialties who located in urban (61.3%) or rural (65.1%) areas.** On the other hand, physicians in surgical specialties were more likely to locate in rural (23.3%) or urban (19.3%) communities than in suburban communities.

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*x^2 = 18.968, 2d·f·, p = .0001

**x^2 = 8.910, 2d·f·, p = .0116

Table V-12

USFMG Practicing Physicians' Community Residence Pattern

	Initial Practice Community:			Current Practice Community:		
	Urban (N = 158)	Suburban (N = 134)	Rural (N = 58)	Urban (N = 19)	Suburban (N = 18)	Rural (N = 5)
Home Community:						
Urban (n = 166)	97 61.4%	51 38.1%	18 31.0%	12 63.2%	5 27.8%	1 20.0%
Suburban (N = 145)	51 32.3%	75 56.0%	19 32.8%	5 26.3%	11 61.1%	4 80.0%
Rural (N = 38)	10 6.3%	8 6.0%	20 34.5%	2 10.5%	2 11.1%	- -

Initial Practice Community	Current Practice Community:		
	Urban (N = 19)	Suburban (N = 18)	Rural (N = 5)
Urban (N = 22)	10 52.6%	10 55.6%	2 40.0%
Suburban (N = 8)	3 15.8%	3 16.7%	2 40.0%
Rural (N = 12)	6 31.6%	5 27.8%	1 20.0%

This specialty distribution was further reflected in the type of practice maintained by USFMG physicians. Physicians located in suburban (83.6%) and rural areas (79.1%) tended more often to have office-based practices than physicians with an initial practice in an urban center (61.3%). USFMG physicians in urban centers were more than twice as likely to establish a hospital-based practice (46.2%) than suburban (21.8%) or rural (20.9%) physicians, as well as to engage more frequently in non-patient-care activities. Indeed, one-quarter of those located in urban areas were involved in medical teaching. Physicians in urban areas were also more likely to be involved in research or administration (see Table V-13).

While there was commonly a variety of office-based types of practice in the three community categories, solo practices were more prevalent in rural areas; partnerships were more frequently reported by suburban physicians; and group practices (not prepaid) were reported twice as often by suburban (20.0%) and rural physicians (23.3%) than by urban physicians (10.9%).

Given the high level of socioeconomic homogeneity among the USFMG population, variables dealing with ethnic background, sex, marital status, family size, and age did not distinguish the three groups in a significant manner. Among these socioeconomic variables, only family size, father's occupation, and age distinguished, to some extent, among the groups. Physicians located in urban areas tended not to have children, were somewhat more likely to have physician fathers, and had a higher average age at the time of their initial practice. Physicians in rural areas tended to be younger, on the average, than suburban or urban physicians; and a larger percentage of them tended to be married and have children. Rural physicians also tended to exhibit the shortest ($\bar{x}$ = 2.00 years) length of initial practice compared with urban ($\bar{x}$ = 2.54 years) and suburban (2.68 years) physicians. Despite differences in age among the three groups of physicians, nearly all USFMG physicians had unlimited full state licenses, and over 40% were also specialty board certified. In fact, rural physicians were as likely as urban physicians (46.5%) to be specialty board certified.

Physicians located in urban and suburban areas were more likely to establish their initial practice in the same state in which they undertook their graduate training program (56.3% and 59.1%, respectively) than physicians who established their initial practice in rural areas (28.0%). Nearly one-half of the USFMGs with urban or suburban practices also tended to choose to locate in the same state in which they had grown up. Only 30% of these two groups tended to establish their practice in the state in which they went to college. Rural physicians, on the other hand, were more likely to establish their initial practice in a different state from their home state (65%), college state (70%), or the state in which they underwent their graduate medical training (72%).

Table V-13

Specialty and Practice Characteristics of USFMGs by Type of Initial Practice Location

	Urban (N = 119)		Suburban (N = 110)		Rural (N = 43)	
	N	%	N	%	N	%
Specialty						
Primary Care	73	61.3	82	74.5	28	65.1
Surgical	23	19.3	12	10.9	10	23.3
Hospital-based	11	9.2	7	6.4	2	4.7
Other	12	10.1	9	8.2	3	7.0
Practice Type						
Office-based	73	61.3	92	83.6	34	79.1
Hospital-based	55	46.2	24	21.8	9	20.9
Teaching	29	24.4	11	10.0	1	2.3
Administration	7	5.9	2	1.8	1	2.3
Research	11	9.2	-	-	-	-
Office-based Practice Type						
Solo	33	27.7	35	31.8	17	39.5
Two-person partnership	13	10.9	20	18.2	4	9.3
Informal association	8	6.7	6	5.5	1	2.3
Group practice (pre-paid)	5	4.2	8	7.3	1	2.3
Group practice (not pre-paid)	13	10.9	22	20.0	10	23.3
Other	4	3.4	3	2.7	4	9.3

NOTE: Totals may not add to 100 percent due to rounding, and multiple selection answers.

Significant differences emerged among these three groups of physicians in identifying factors that were "very important" or "important" in their choice of initial practice location. USFMGs who chose to establish their initial practice in an urban location reported that professional factors were most important in their location decision. Of the five factors perceived as important by those located in an urban area, the availability of clinical support facilities and the availability of clinical support facilities and personnel was most frequently mentioned (76.5%). Access to continuing education was the second most frequently mentioned factor (73.2%); the opportunity for regular contact with other physicians was the third most commonly mentioned factor (71.4%); these factors were followed by the opportunity for regular contact with a medical school and medical center (63.0%), and the opportunity to join a desirable practice.

USFMGs who located their initial practice in a suburban area identified a mix of professional, familial, and personal preference factors among the five most important location determinants. Of these five factors, three related to the professional aspects of their medical career-availability of clinical support and personnel (86.4%), access to continuing education (68.2%), and opportunity to join a desirable practice (63.6%). The second factor most frequently mentioned by USFMGs with suburban practices related to their preference for urban, suburban, or rural living (70.0%). The fifth most frequently reported location determinant dealt with the quality of the education system available for children in the chosen location (61.8%).

USFMGs who located their initial practice in rural areas put more emphasis on familial and social factors than on professional, career-related factors. Of the five factors identified by these USFMGs as "very important" or "important," only one was career-related: availability of clinical support facilities and personnel (67.4%). The most frequently mentioned location determinant dealt with physicians' personal preference for rural living (76.7%). This factor was further supported by the "climate or geographic features of the area," a factor that was perceived as important by 62.8% of the USFMG physicians in rural areas. The quality of the education system available for children in the chosen location (72.9%) and spouse's influence (60.5%) were the two familial factors most frequently mentioned. These factors were followed by the prospect of being more influential in community affairs, which was the fourth most frequently mentioned location determinant (62.8%).

When these factors were aggregated into four categories (professional and economic factors, life-style factors, family-related factors, and location during education/military trianing factors), the significant differences among urban, suburban, and rural USFMG practicing physicians were maintained. As shown on Table V-14, USFMGs located in urban and suburban areas identified professional and economic factors as the main practice-location determinants. Rural physicians, on the other hand, gave almost equal importance to professional and economic factors as to life-style factors.

Table V-14

Factors Determining Practice Location by Urban/Suburban/Rural Initial Practice Location

	Urban	Suburban	Rural
Professional and Economic	73 52.52	62 53.91	22 44.90
Life Style	31 22.30	31 26.96	24 48.98
Family	22 15.83	14 12.17	2 4.08
Prior Education/ Military Training	13 9.35	8 6.96	1 2.04

$\chi^2 = 16.477$, 6 d.f., $p = .0114$

Despite differences among USFMG physicians in determining their initial-practice locations, USFMG physicians perceived the opportunity to join a desirable practice as the single most important location determinant--regardless of location choice.

5.5 USFMG Location in Counties with Shortage/Non-Shortage Areas

USFMG location in shortage/non-shortage areas was examined vis-a-vis three location milestones:

- USFMG location during graduate medical training
- the location of their initial practice
- for USFMGs who relocated, the shortage/non-shortage area characteristics of their current location

USFMG location in shortage or non-shortage areas was determined on the basis of the list of health manpower shortage areas, designated under Section 332 of the Public Health Service Act (Federal Register, May 8, 1981). Comparisons were made between USFMGs' hospital or practice locations and the list of health manpower shortage areas. The list, however, is county based, and thus delineates counties with designated shortage areas rather than shortage areas per se. While in rural areas counties are generally equated with a designated shortage area, designated shortage areas constitute only portions of urban counties. Given these characteristics of the health manpower shortage areas list, the analyses performed were confined to hospital practice locations in counties with/without designated shortage areas rather than to locations in shortage or non-shortage areas.

During their graduate medical training, the majority of surveyed USFMGs were associated with hospitals located in counties where there were shortage areas. Of the 463 surveyed USFMGs, 375 (81.0%) were affiliated with training programs located in counties with shortage areas.

As expected, the number of USFMG practicing physicians who established their initial practice in a county with a shortage area was lower than the number located in counties with shortage areas during graduate medical training. However, 261 USFMGs (59.9%) located their initial practice in counties with shortage areas. This finding was consistent with the tendency of a large number of USFMGs (51.1%) to establish their initial practice in the same state in which they had received their graduate medical training. Moreover, one-half of the USFMGs whose graduate training program was located in a county with a shortage area, also established their practice in a county with shortage areas. Similarly, USFMGs who relocated their practice tended to relocate, two-thirds of the time, in counties with shortage areas.

The urban, suburban, or rual areas in which USFMGs located their initial practice varied significantly with the shortage/non-shortage characteristics of the area. USFMGs with urban practices tended in the majority of cases (86.1%) to establish their practice in a county with a shortage area. This behavior pattern was evident among two-thirds of the USFMGs with suburban practices. Among USFMG practicing physicians in rural practice, only 56% located their practice in shortage areas.

5.6 Multivariate Analysis of Location Decisions

Following the pattern of analysis used for specialty choice, multivariate techniques were used to supplement the descriptive data concerning USFMGs' location decisions. Logit analysis, described earlier in Section 4.9, was again used to assess the relative importance of a series of factors in influencing the choice of practice location.

Two sets of dependent variables were used in this location analysis. The first was a measure of the type of community (i.e., urban, suburban, or rural) in which the USFMG's initial practice was located. Each decision was structured as a binary choice before the analysis was performed. For example, the choice of an urban practice was structured as the result of a choice between an urban and a non-urban setting, where non-urban included both suburban and rural areas. Due to the small number of observations, equations assessing the probability of practicing in a rural area could not be estimated directly. Instead, influential factors were inferred from the results of the equations estimated for urban and suburban locations.

The second dependent variable was an indicator of whether the USFMG's practice was located in a county in which there was a physician shortage area. As noted earlier, precise information about whether the practice was located within or outside of the shortage area was not available. Again, shortage areas were those designated as such in the May 8, 1981 Federal Register.

The general model of location choice that was posited for this analysis was similar, but not identical, to the specialty choice model described earlier. That model is specified below:

$$\text{LOCATION} = f(\text{DEMOG, PASTLOC, SPECIALTY, MEDEDUC, REGION, TIME})$$

where DEMOG, MEDEDUC, and TIME are defined in the same way they were in the specialty choice models. The remaining categories of explanatory variables are defined as follows:

PASTLOC = characteristics of the physician's residence at important points in his/her life, such as the type of community in which he/she was brought up

SPECIALTY = type of specialty selected by USFMG

REGION = indicators that the physician believed certain attributes of a region were important in making a location desirable (e.g., presence of a hospital or medical center, quality of schools, availability of cultural amenities)

Again, preliminary analysis revealed that demographic characteristics, as well as the TIME measure, were not important for this sample in influencing location decisions. Thus, they were not included in the final logit models. Representative measures of the remaining categories were included in the analysis.

Eight explanatory variables were included in the logit analysis of USFMGs' location decisions. Indicators of the physician's past location included the type of community in which he/she was raised (URBCOMM, RURCOMM). Relevant characteristics of the USFMG's medical education included indicators of whether government financial assistance was received (GOVTFIN) and the location of the foreign medical school (MEXICO).

In addition to the above measures, regional attributes reported to be important influences were constructed to reflect the "most important" influence on location choice identified by the respondent. The detailed responses were classified into four categories:

- Professional and Economic Influences (PROFINFL)
- Community Attributes (COMMINFL)
- Family-Related Influences (FAMINFL)
- School-Related Influences (SCHINFL)

For example, if a respondent reported that a professional consideration was the most important factor affecting the choice of a practice location, that respondent would receive a value of 1.0 for PROFINFL and 0.0 for the remaining types of influences.

Finally, specialty (PRIMCARE) is also included in the location models, under the assumption that specialty choices are made well before location decisions. The location model posits that location decisions are likely to be affected by the physician's choice of specialty. For example, physicians in primary-care specialties are less likely than other specialists to require the kinds of complementary medical technologies found only in large medical centers in urban areas. Neither do primary-care physicians need to depend upon a well-developed network of contacts with other physicians in order to obtain patient referrals. Conversely, it is likely that physicians in complex, non-primary-care specialties will find rural or less-urbanized areas fundamentally unsuited for their style of medical practice.

Definitions and descriptive statistics for the above-listed variables are provided on Table V-15.

With respect to the type of community in which the practice was located, the logit model estimated the probability that a USFMG will choose an urban, suburban, or rural location as a function of the several explanatory variables. That model was specified as follows:

$$\text{Probability of choosing urban/suburban/rural location} = B_0 + B_1\,\text{URBCOMM} + B_2\,\text{RURCOMM} + B_3\,\text{GOVTFIN} + B_4\,\text{MEXICO} + B_5\,\text{PROFINFL} + B_6\,\text{COMMINFL} + B_7\,\text{FAMINFL} + B_8\,\text{PRIMCARE} + \varepsilon$$

where, as before, B_0 is the constant term, B_1 through B_8 are the coefficients associated with each of the explanatory variables, and ε is a random-error term. Again, maximum likelihood estimation procedures were used to develop the parameter estimates.

Table V-16 presents the results of the logit analysis. As noted earlier, the analysis could not be performed directly for rural practices, due to the small number of observations, but the coefficients for that analysis can be inferred from the other two equations.

Both equations shown on Table V-16 explained a significant portion of the overall variation in the data, as indicated by the χ^2 values associated with the likelihood ratios. It appears, therefore, that location decisions could be predicted more successfully than specialty choices. Several factors appear to have been important influences; of these, type of home community and specialty type predominate. The results strongly suggested that USFMGs tended to practice in areas similar in character to those in which they grew up. Specifically, USFMGs from urban areas were more likely to practice in urban areas, and those from suburban areas were more likely to settle in suburban locations. (This latter conclusion can be inferred from the fact that USFMGs from urban and rural areas were significantly less likely than the reference suburban group to practice in suburban areas.)

Specialty, as expected, was also an important factor. USFMGs in primary-care specialties were less likely to practice in non-urban locations.

Table V-I5

Definitions of and Descriptive Statistics for the Variables Used in the Logit Analyses of Location Decisions

Variable Name	Definition	Mean	Standard Deviation
COMMINFL	Importance of community attributes in influencing practice location 1 = most important 0 = not most important	0.27	0.45
FAMINFL	Importance of family considerations in influencing practice locations 1 = most important 0 = not most important	0.11	0.32
GOVTFIN	Whether federal or state financial aid was received 1 = received government aid 0 = did not receive government aid	0.44	0.50
MEXICO	1 = medical school located in Mexico 0 = elsewhere	0.53	0.50
PRIMCARE	1 = physician is in primary-care specialty 0 = otherwise	0.67	0.47
PROFINFL	Importance of professional and economic considerations in influencing practice location 1 = most important 0 = otherwise	0.44	0.50
RURCOMM	1 = home community in rural area 0 = elsewhere	0.12	0.33
RURPRAC	1 = practice located in rural area 0 = elsewhere	0.19	0.39
SBRBCOMM	1 = home community in suburban area 0 = elsewhere	0.42	0.49

Table V-15 (Cont.)

Variable Name	Definition	Mean	Standard Deviation
SBRBPRAC	1 = practice located in suburban area 0 = elsewhere	0.41	0.49
SCHLINFL	Importance of school locations in influencing practice location 1 = most important 0 = otherwise	0.06	0.24
STGAREA	1 = practice located in county with shortage area 0 = elsewhere	0.74	0.44
URBPRAC	1 = practice located in urban area 0 = otherwise	0.40	0.50
URBCOMM	1 = home community in urban area 0 = otherwise	0.46	0.50

Table V-16

Results of Logit Analysis of Location Decisions
(Type of Community)

(Numbers in parentheses are asymptotic t-statistics)

Independent Variable	Dependent Variable: Probability of Urban Practice (URBPRAC)	Dependent Variable: Probability of Suburban Practice (SBRBPRAC)
Constant	.351 (1.00)	1.247** (3.45)
URBCOMM	.507** (3.65)	-.435** (3.27)
RURCOMM	.001 (0.00)	-.821** (3.49)
GOVTFIN	-.229* (1.72)	.121 (0.94)
MEXICO	-.357** (2.73)	.116 (0.91)
PRIMCARE	-.357** (2.63)	.362** (2.60)
PROFINFL	-.177 (0.96)	.020 (0.11)
COMMINFL	-.236 (1.16)	-.121 (0.61)
FAMINFL	.131 (0.53)	-.012 (0.05)
χ^2 for likelihood ratio	84.44*	88.73**

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*Indicates significant at .10 level.
**Indicates significant at .05 level.

Characteristics of USFMGs' medical education appeared to affect directly only the probability of practicing in an urban location. USFMGs who reported receiving government financial assistance were significantly less likely to practice in urban areas, even after specialty and type of home community had been taken into account. Similarly, graduates of Mexican medical schools were significantly less likely to practice in urban areas.

Once the other factors in the model had been taken into account, the specific types of influences reported to be most important did not attain statistical significance. For example, USFMGs who were most influenced by professional or economic considerations in choosing their practice locations were no more likely to locate in urban areas than in other regions. This indicates that, among those responding to the questionnaire, professional or family considerations and community attributes were not significantly more important for USFMGs who chose one type of community as opposed to another.

The second location measure that was examined was whether the USFMG located his/her practice in a county with a shortage area (STGAREA). Ideally, it would have been desirable to investigate the factors influencing USFMGs' decisions to practice in shortage areas per se. However, for the reasons given earlier, it was possible only to determine whether practice locations were in counties where there were shortage areas. Consequently, the results of the analysis must be interpreted cautiously. The same model that was used to predict the type of community in which the practice was located was used to assess the probability of locating in a county containing shortage areas, with the exception that the specific influences were omitted from the list of explanatory variables. Descriptive data for the included variables wre shown earlier on Table V-15 and the results of the analysis are shown on Table V-17.

Overall, the model was not successful in explaining decisions about whether to practice in counties with shortage areas. The χ^2 statistic associated with the likelihood ratio was not significant at conventional levels, indicating that the vector of estimated coefficients was not significantly different from zero. None of the "main effects"--that is, the explanatory variables by themselves--was an important influence on this location decision (though all had been in the previous analysis). However, when a series of interaction terms (i.e., a combination of variables) was added to the model, two of these proved to be marginally significant. Specifically, respondents from rural areas who received government financial assistance were more likely to practice in or near shortage areas than USFMGs who did not fit that description. In contrast, graduates of Mexican medical schools who received federal or state financial aid were, on average, less likely to practice in shortage areas.

On balance, however, it appeared that decisions about whether to practice in shortage areas, like specialty choices, could not be explained by the characteristics included in the model. While, again, this could be the result of imprecise measurement, it seems more likely that other, perhaps more subjective, factors are the more important determinants.

Table V-17

Results of Logit Analysis of Location Decisions (Practice in Shortage Areas)

(Numbers in parentheses are asymptotic t-statistics)

Independent Variable	Dependent Variable: Probability of Practice in County with Shortage Area
Constant	-1.056** (4.63)
URBCOMM	0.175 (1.14)
RURCOMM	-0.075 (0.33)
GOVTFIN	-0.122 (0.55)
MEXICO	-0.131 (0.58)
URBCOMM·GOVTFIN	0.042 (0.27)
URBCOMM·MEXICO	0.194 (1.30)
RURCOMM·GOVTFIN	0.359* (1.65)
RURCOMM·MEXICO	0.026 (0.12)
GOVTFIN·MEXICO	-0.233* (1.63)
χ^2 for likelihood ratio	2.18

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*Indicates significant at .10 level.
**Indicates significant at .05 level.

Chapter V: Footnotes

1. See Eisenberg and Cantwell (1976), Hadley (1975), and Health Resources Administration (DHEW Publication HRA 75-3, July 1974).

2. For example, Cooper et al. (1977) reported frequency of responses regarding the importance of particular factors in the location decisions made by primary-care physicians actually practicing in rural areas, or who had indicated (in a previous survey) they had considered practicing in a rural region. Both Cooper et al. (1977) and Schwartz and Cantwell (1976) reported results based upon questionnaires sent to all graduates of U.S. medical schools from a particular graduating class: Cooper et al. surveyed the 1965 class (in 1972), while Schwartz and Cantwell reported the results of a 1972 survey of the 1960 graduating class. Cuca (1980), on the other hand, reported results of questionnaires sent to senior-year medical students across the U.S. in 1978. Other researchers reported the frequency of responses to questionnaire items obtained from much smaller samples of practicing physicians. These samples were drawn from physicians practicing in particular regions of a state (e.g., Parker and Sorenson, 1978), or who had graduated from a particular medical school (e.g., Becker et al., 1979).

3. For findings regarding the age/location relationship, see Becker et al., (1979) and Parker and Sorenson (1978). Fox and Richard (1977) find that the longer a physician has practiced in a region, the more dominant his/her position is and the more difficult it is for newcomers to compete in the area. They predict that more dominant physicians tend to practice in more affluent/urbanized areas. For other findings on the effects of age, marital status, and school quality upon location decisions, see Cooper et al.(1975 and 1977) and Werner et al. (1978).

4. See Hadley (1975) and Werner et al. (1978) for examples. Hadley's dependent variables are the state of a physician's practice location, defined in terms of prior contact (no contact, medical school only, graduate training only, and medical school plus graduate training).

5. See Langwell; 1980, p. 283.

6. Cooper et al. (1975) reported that a substantial number (16.5%) of the physicians that they surveyed reported "income potential" to be an important factor in the location decision. However, "income potential" was not among the significant determinants of physician location in their multivariate analysis of the same data. In a later analysis of a subset of these physicians, Cooper et al.(1977) found that income potential was not reported as an important factor more frequently by either physicians in metropolitan area practice or those in rural practice. Income potential was also insignificant in the analysis of urban/rural and shortage/non-shortage area locations of physicians' practices in the multivariate analyses of Werner et al. (1978).

7. With respect to the importance of cultural amenities in physicians' location decisions, Cooper et al.(1975) found this to be an important explanatory variable, as did Werner et al.(1978). However, in the latter study, "cultural factors were more important in explaining urban versus rural location than in the shortage/non-shortage area location equations." In reviewing data on primary-care physicians, Zangwell and Budde (1978) found group practice to be the most frequent form of practice arrangement in rural counties. In a separate study of primary-care physicians, Cooper et al. (1975) reported that "opportunity to join a desirable partnership or group practice" was the factor most frequently identified by physicians as important in their location decision. However, the same authors found it to be an insignificant predictor variable in their multivariate analyses. In this same analysis, Cooper et al. (1975) found the "payment of forgiveness loans" to be among the most significant predictors of physicians' location in one form of their regression equations. Similarly, Werner et al.(1978) found a moderately significant coefficient on a variable indicating physicians reported that a loan forgiveness program influenced their location decisions. The result, however, was only significant in their urban versus rural equation. It was insignificant as a factor explaining location in shortage versus non-shortage counties.

CHAPTER VI. SUMMARY AND CONCLUSIONS

6.0 Overview

The paths leading to medical licensure and subsequent medical practice are long and arduous. These paths are even more arduous for those American citizens who obtain their medical education in foreign countries (USFMGs). USFMGs encounter and must successfully meet three sets of demands. First, they have to contend with the educational, professional, and cultural demands imposed by the country in which they obtain their medical education. This set of demands includes, in many instances, becoming fluent in a foreign language, adjusting to a foreign culture, and meeting educational and professional standards that may be peculiar to the respective foreign school. Once USFMGs have completed their foreign medical education, they must contend with two additional sets of demands: 1) USFMG-specific requirements, which must be met only by citizens who study medicine abroad, and 2) a general component, which all U.S. medical graduate students and physicians must undertake. The movement of USFMGs along the paths designated by these sets of requirements has been conceptually formulated in this study in the form of a 'medical education and practice continuum'.

The degree to which U.S. citizens who study medicine abroad successfully handle the first set of demands--i.e., meet the educational, professional, and cultural requisites and complete their foreign medical education--is unknown. The extent to which those who complete their foreign medical education successfully meet the USFMG-specific requirements is only partially known, mostly through data on the ECFMG examination passage rates and scores. USFMGs' ability to meet the general component of requirements--i.e., complete a U.S. program of graduate medical training, obtain federal and state licensure, and practice medicine--is also only partially known.

This study of the specialty choice and practice location of U.S. citizens who graduated from foreign medical schools between 1970-1979 constitutes the first comprehensive attempt to document the paths taken by USFMGs who have successfully integrated into the U.S. medical care delivery system (i.e., who have successfully met the three sets of requirements described above). By examining the movement of USFMGs along the medical education and practice continuum, and the paths USFMGs were most likely to take at various points along this continuum, this study accomplished its two major objectives:

- to develop a profile of USFMGs from the point of entry to foreign medical school through their selection of a specialty and the establishment of a medical practice
- to identify, through the development of decision models, and using multinomial logit techniques, the variables that determine USFMGs' choice of specialty and practice location.

6.1 The USFMG Profile: Characteristics, Experiences, and Path Choices Along the Medical Education and Practice Continuum

6.1.1 Socio-Economic Characteristics

Nearly all surveyed USFMGs were male and Caucasian. Most were brought up in the Northeastern United States in communities ranging widely in size. USFMGs' parents were well educated; one-fifth had physician fathers. USFMGs attended private colleges more often than state colleges and majored, in most cases, in biological sciences.

6.1.2 Foreign Medical Education

USFMGs graduated from college at an average age of 22.5 and entered medical school 1.5 years later, at an average of 24. The surveyed USFMGs studied in a large number of schools located in 24 countries. Most studied in Mexico, Italy, or Western Europe. The most commonly attended schools were the University of Guadalajara in Mexico, and the Universities of Bologna and Rome in Italy. On the average, it took USFMGs five years to complete medical school; most performed well academically.

To finance their foreign medical education, USFMGs used multiple sources of financial assistance. Most USFMGs used a combination of the following five sources:

- personal savings
- parents' financial assistance
- spouse's financial assistance
- federal (U.S.) financial assistance
- state financial assistance

Nearly all USFMGs were financially assisted by their parents. Over one-half used their personal savings. Approximately 20 to 30 percent also received state or federal financial aid. USFMGs who grew up in rural communities were more likely to obtain federal financial aid than USFMGs who grew up in urban or suburban areas. U.S. federal financial aid was also more frequently provided to USFMGs who attended Mexican medical schools and to USFMGs in primary care and "other" specialties. After completing their medical education, recipients of U.S. federal financial aid tended to locate their initial practice in rural or suburban communities rather than in urban communities. USFMG recipients of state financial aid tended to locate their practice in counties with shortage areas twice as often as in counties with non-shortage areas.

USFMG satisfaction with the medical education they had received varied by country of medical school. Overall, USFMGs who studied in Western Europe were most highly satisfied with all components of their medical education. USFMGs who studied in Mexico were least satisfied with their schools' facilities, equipment, faculty, curriculum, and clinical training. Among these components, USFMGs were least satisfied with the quality and quantity of clinical training they had received. To supplement the clinical training provided by the foreign medical schools, a majority participated in self-arranged, clinical training programs in U.S. hospitals while they attended foreign medical schools.

6.1.3 Coordinated Transfer Application System (COTRANS)

At this point on the medical education and practice continuum, two paths are available to U.S. citizens who study medicine abroad. They can either complete their medical education in the foreign country, or attempt to transfer with advanced standing to a U.S. medical school, via COTRANS.

USFMGs' degree of satisfaction with their foreign medical education was related to their attempts to transfer with advanced standing to a U.S. medical school. Significantly more USFMGs who studied in Mexico tried to transfer than from any other country. Overall, about one-third of surveyed USFMGs attempted to transfer. Only a few were accepted, but even they decided to complete their medical education abroad.

6.1.4 Fifth Pathway Program

The Fifth Pathway program provides an alternative way for USFMGs to enter the American medical education system. This program, established in 1970, was available to USFMGs who studied medicine in schools that require a year of internship or social services before granting the medical degree. The program provides a year of supervised undergraduate clinical training in the United States.

Over one-half of the USFMGs participated in the program, including the majority of those who studied in Mexico.

6.1.5 The ECFMG Examination

USFMGs are required to take the ECFMG examination in order to enter a graduate medical training program in the United States. Nearly all surveyed USFMGs took the ECFMG examination and obtained their graduate medical training in the United States. However, the USFMG scores on the ECFMG examination averaged only marginally above the score required for passage, and one-third of the USFMGs had to repeat the examination.

6.1.6 Graduate Medical Training

USFMGs participated in a large number of graduate medical training programs distributed across the United States. The largest group of USFMGs--one-third--participated in graduate training programs located in New York State. Only one-half of the USFMGs chose their graduate medical training program through the National Resident Matching Program. Generally, USFMGs made their own program arrangements.

During their graduate medical training, USFMGs encountered a variety of problems, which they attributed to their foreign medical education and to their USFMG status. Attitudinal problems were most prevalent. USFMGs complained about the attitudes of faculty toward them, and about the attitudes exhibited on the part of other FMG residents. USFMGs also encountered difficulties in performing general hospital duties--a reflection of deficiencies in the clinical training they had received in their foreign medical school--and felt that their knowledge of basic medical sciences was lacking.

Negative faculty attitudes were experienced by USFMGs regardless of the country in which they had received their medical education. However, USFMGs who studied medicine in Mexican schools experienced more difficulty, due to the gaps in their knowledge of basic medical sciences. USFMGs who graduated from Italian or West European schools found the performance of general hospital duties their major area of difficulty.

6.1.7 Licensure

Before they can practice medicine, USFMGs (like all U.S. physicians) are required to take the Federation Licensing Examination (FLEX). Nearly all surveyed USFMGs were licensed. The largest group of USFMGs was licensed to practice medicine in New York State.

6.1.8 Specialty Choice

During their graduate medical training, the surveyed USFMGs chose 26 areas of specialization. Most often USFMGs chose to specialize in internal medicine, family medicine, general surgery, pediatrics, diagnostic and therapeutic radiology, and psychiatry. Primary-care specialties were most prevalent (selected by two-thirds of USFMGs). Over one-tenth of the USFMGs chose surgical specialties, and fewer than one-tenth selected hospital-based specialties.

In selecting their specialty, USFMGs were most often motivated by the "attributes" of the specialty. Attributes considered most important were: the patient contact associated with a specialty, and the encouragement USFMGs received from others who trained in the specialty. These factors also appeared to be important for USFMGs in each of the four specialty categories. The demand for a specialty and the income potential associated with a specialty were not perceived as important factors in specialty choice.

6.1.9 Specialty Board Certification

All physicians find that specialty board certification is a slow process, although an increasing number of them recognize it as necessary. Over one-half of the USFMG practicing physicians were specialty board certified. Most USFMGs had been certified in the four years prior to this study. Primary-care physicians tended to be specialty board certified more often than physicians with surgical and hospital-based specialties.

6.1.10 USFMG Practice Location

USFMG practice locations were divided into three categories: initial practice location (practice location upon completion of graduate medical training), current practice location, and intermediate practice locations (practice locations selected between initial location and current location). Since the majority of USFMGs have not changed their practice location, most of the analysis focused on initial practice and location characteristics.

After completing their graduate medical training, USFMGs located their practice all over the country (in 40 states). Most frequently, USFMGs located their initial practice in New York, California, or New Jersey. Most USFMGs chose to practice in small- to medium-sized communities. Nearly 50% of the USFMGs practiced in urban areas; nearly 40% had suburban practices; and approximately 20% established practice in rural areas.

6.1.11 Characteristics of Initial Practice

USFMGs have been in their initial practice from 1 to 11 years. On the average, they have maintained their initial practice for 2.35 years. Since most of the USFMGs who graduated from foreign medical schools between 1970 and 1979 have been in practice for a relatively short time, the majority were still in their initial practice phase.

Most USFMGs were in patient-care practice and maintained an office-based practice. Most frequently they had either a solo or a group practice. Approximately one-third had a hospital-based practice. USFMGs not involved in patient-care were divided among medical teaching, research, and administration.

USFMG practicing physicians had an average annual income of $63,833. Those practicing in rural communities reported the highest annual income. Those practicing in suburban communities reported the lowest average annual income. USFMGs' annual income also varied, as expected, by specialty categories. USFMGs in surgical specialties had significantly higher annual incomes than USFMGs in any of the other three specialty categories. The second highest annual income was reported by USFMGs in hospital-based specialties followed by primary-care physicians, and USFMGs in the "other" specialties category.

6.1.12 Characteristics of Current Practice

Only a small group of USFMGs (n=60) relocated their practice. Most practice relocations took place in the three years prior to this study. USFMGs relocated their practices in 20 states, in communities whose size and urban/suburban/rural characteristics resembled those of the communities in which their initial practice had been located.

USFMGs decided to relocate their practice mostly as a result of emerging professional opportunities and the income potential associated with these opportunities. USFMGs who relocated their practice were mostly in patient-care and had an office-based practice. One-third of this group were hospital-based.

The overwhelming majority of USFMGs had only one practice since completing their graduate medical education. Only 60 USFMGs had relocated their practice once, and only 11 USFMGs had relocated their practice twice or more.

6.1.13 Resident Location and Practice Plans

Residents' practice location plans varied greatly. About two-fifths of the residents were uncertain about their future practice location. About one-quarter planned to locate in a different state than the state in which they had received their graduate medical education, and about one-third planned to locate their practice in the same state. Decisions about their practice location were most frequently based on a mix of familial and professional considerations, including: educational opportunities for children, availability of hospital appointments, openings in specialty, and cultural and social opportunities available in the area. As with USFMG practicing physicians, previous familiarity with an area (due to growing up, attending college, or doing military service there) was the least important practice-location determinant.

As with USFMG practicing physicians, most residents chose patient-care, office-based types of practice.

6.1.14 Professional Activities

To determine the choices of professional activities, and the extent to which USFMGs engage in them, sampled USFMGs were asked about academic appointments, scholarly publications, and presentations at conferences. The resulting data demonstrated a considerable level of such professional activities. For instance, 45% of the USFMG practicing physicians have had academic appointments since they completed their graduate medical training. Nearly 25% have published scholarly articles, 41% have given presentations in medical conferences. Of those who presented in medical conferences, 62% made between one and three presentations.

Despite difficulties encountered by USFMGs upon their return to the United States to undertake graduate medical training, and at the start of their medical career, the majority of USFMGs expressed satisfaction with their career. Over 80% of the practicing physicians were either "very satisfied" or "satisfied" with their selection of a graduate training program, their specialty choice, practice location, the type of practice they selected, and their overall professional development. Only about 5% expressed dissatisfaction with the above components of their career.

6.2 Specialty Choice Analysis

In addition to the specialty choice profile developed for USFMGs (i.e., USFMG tendency to select primary-care specialties) and the examination of motivating factors in specialty choice (i.e., the patient contact and intellectual stimulation provided by a specialty), further specialty choice analyses were conducted. These analyses focused on the relationships between specialty choice and practice location characteristics, and between specialty choice and other relevant variables.

6.2.1 Medical Specialty and Practice Location Characteristics

Medical specialty differentiated little among initial practice type and practice location characteristics. USFMGs in all specialty categories tended to locate their initial practice in communities ranging widely in size, type (urban, suburban, rural), and geographic region. Office-based practice was, as expected, most typical of the primary-care physician. Solo practice was most prevalent among physicians in the "other" specialty category, and a two person partnership was most common among physicians in surgical specialties. USFMGs in the hospital-based specialties tended to engage in non-patient medical activities (such as teaching and research) more frequently than USFMGs in the other three specialty categories.

Physicians in hospital-based and "other" specialties tended to have patients with lower socio-economic characteristics and minority background more often than physicians in the primary-care and surgical specialties.

Fewer than one-fifth of the USFMG practicing physicians changed their practice location. Physicians in primary-care specialties tended to relocate more frequently than physicians in the other three specialty categories.

6.2.2 Multivariate Analysis of Specialty Choice

The respondents' specialty choices were also analyzed using multivariate analysis, which evaluated the relative influence of a number of factors on whether a USFMG entered a primary-care specialty. The results indicate that specialty choice could not readily be predicted by the personal and environmental characteristics included in the model, such as academic ability and medical school location. Only one characteristic--an indicator of whether the respondent's father was also a physician--proved to be significantly associated with specialty choice. USFMGs with physician fathers were, on average, less likely to choose primary-care specialties. It must be inferred that other unmeasured factors must explain specialty choice.

6.3 Practice Location Analysis

As with USFMGs' specialty choice, practice location data were subjected to multiple analyses. These analyses focused on location determinants, state and regional movements of USFMGs, community types (urban/suburban/rural, and shortage/non-shortage areas) in which USFMGs were likely to locate their practice, and the relationship between practice location and other relevant variables.

6.3.1 Factors Involved in Practice Location Choice

USFMGs were asked to identify the "important" or "very important" factors in their practice location choice. Five types of practice location choice factors were identified:

- professional opportunities available in the area
- community characteristics
- familial considerations
- personal preferences
- USFMG familiarity with the area and community

Factors relating to the professional opportunities offered by the area were reported as most important in USFMGs' practice location decisions. These factors also emerged as most important in determining USFMG practice location choice. USFMGs regarded the following factors as important:

- the availability of clinical support facilities and personnel
- opportunities for regular contact with other physicians
- access to continuing medical education
- the opportunity to join a desirable practice

The last factor--the opportunity to join a desirable practice--was also identified most frequently as the single most important factor in practice location choice.

Other factors that one-half or more of the surveyed USFMG practicing physicians regarded as important were a mix of personal preference, familial, and community factors. These factors included:

- preference for urban, suburban, or rural living
- quality of the local education system for children
- opportunities for social life
- cultural advantages of area
- climate or geographic features of area
- income potential

Income potential was the second most highly ranked factor in determining practice relocation.

Factors that USFMGs considered of least importance in their practice location choice related to USFMG familiarity with the area. Other factors considered of marginal importance were the availability of loans, community efforts to recruit physicians, and prospects of being influential in community affairs.

6.3.2 Movement Within and Across States (State Location Analysis)

The state location analyses were conducted for all surveyed USFMGs, as well as separately for residents and practicing physicians.

To tract USFMGs' state location history, data were collected about their residence during various milestones in their lives. USFMGs were asked to identify the state in which:

- they had lived for the longest period before they went to college
- they went to college or university
- they received clinical training while they were students in a foreign medical school
- they received clinical training as part of their participation in the Fifth Pathway program
- they received graduate medical training
- they set up their initial practice
- they set up their current practice location, if different from initial practice location

Only the first five state location milestones applied to all surveyed USFMGs. Approximately one-half of the surveyed USFMGs remained in their home state throughout their education and training. USFMGs tended to attend college, receive clinical training while in foreign medical school, participate in Fifth Pathway programs, and obtain their graduate medical training in their home state. The location of the clinical training program during foreign medical school and the location of the Fifth Pathway program most frequently accounted for USFMG choice of graduate medical training programs. USFMGs tended to select graduate medical training programs located in the same state in which they had received clinical training.

The location of the clinical training program during foreign medical school and the location of the Fifth Pathway program accounted most frequently for the location of the graduate medical training program for USFMG interns/residents. Their plans for practice location, however, were most dependent on the state location of their graduate medical training program.

The location of the graduate medical training program most commonly determined initial practice location for USFMG practicing physicians. USFMG practicing physicians whose current practice location differed from their initial practice location tended in all cases to relocate their practice in the state in which they had received clinical training while still students in foreign medical schools. For two-thirds of these practicing physicians, current practice location was in the same state as their initial practice.

6.3.3 Regional Location Analysis

To determine the extent to which USFMGs tended to stay during their education, training, and practice in the same geographic region, USFMGs' location during the previously identified milestones was analyzed. The regional analysis conducted for all surveyed USFMGs, for residents, and for practicing physicians was based on the hypothesis that a large proportion of USFMGs would tend to stay in the same geographic region throughout their education, training, and practice. This hypothesis was confirmed in all regional analyses: approximately 10% of the USFMGs who did not stay in their home state remained in the same geographic region.

The home region, the region in which USFMGs received clinical training during their foreign medical curriculum, and the Fifth Pathway program region accounted for the regional location of over 70% of all surveyed USFMGs, USFMG residents, and USFMG practicing physicians.

The regional location of USFMGs' graduate medical training program accounted most often for the (regional) initial practice location chosen by USFMG practicing physicians. However, given the fact that home region was most strongly associated with the regional location of USFMGs' graduate medical training program, over one-half of the practicing physicians located their initial practice in their home region. Current practice location (if different from initial location) was most closely associated with the region in which USFMGs participated in clinical training while in foreign medical school and in Fifth Pathway programs.

6.3.4 Urban, Suburban, and Rural Practice Locations

The purpose of the urban, suburban, and rural practice location analysis was to determine the extent to which USFMGs tended to locate their practice in types of communities familiar to them.

USFMGs grew up mostly in urban and suburban communities. Only one-tenth grew up in rural areas. The distribution of the types of communities in which USFMGs located their initial practice was different, to some extent, from the distribution of USFMGs' home communities. The number of USFMGs who located their initial practice in rural areas was larger than the number who grew up in such areas. In fact, over one-tenth of the physicians who were raised in urban and suburban communities established their initial practice in rural communities. On the other hand, USFMGs who grew up in rural areas were as likely to locate their practice in rural areas as in urban or suburban areas. Overall, more than one-half of the physicians in each of the three groups tended to locate their initial practice in the same type of community as that in which they had grown up.

The specialty distribution of USFMGs located in urban, suburban, and rural communities varied somewhat, although a mix of all specialty categories was present in each community type. USFMGs in primary-care specialties were concentrated in a larger proportion in suburban communities, while USFMGs with surgical specialties were more likely to locate in rural and urban communities.

This specialty-mix distribution was further reflected in the types of practice maintained by USFMGs located in the three types of communities. Physicians with practices in suburban and rural areas tended to have office-based practices more than physicians in urban centers. USFMGs with practices in urban areas were more than twice as likely to establish a hospital-based practice than suburban or rural USFMG physicians; they also tended to engage more frequently in non-patient care activities.

Of the various office-based types of practice, solo practices were more prevalent in rural areas and partnerships were more frequently reported by suburban physicians. Group practices were reported twice as often by suburban and rural physicians as by urban physicians.

USFMGs with practices in urban, suburban, and rural communities differed, to some extent, in terms of age, family size, and parent's occupation. Physicians located in urban areas tended not to have children, were more likely to have physician fathers, and were older, on the average, when they established their initial practice. Physicians in rural areas tended to be younger, on the average, to be married, and to have children. Rural physicians also exhibited the shortest initial practice duration compared with urban and suburban USFMG physicians. Nearly all USFMG physicians, regardless of the type of community they chose, had unlimited, full licenses. Rural physicians were as likely as urban physicians to be specialty board certified.

Physicians located in urban and suburban areas were more likely to establish their initial practice in the same state in which they participated in a graduate medical education program than were physicians who established their initial practice in rural areas. Over one-half of the physicians with urban and suburban practices located their initial practice in their home state. USFMGs with rural practices were more likely to locate their initial practice in a state different from their home state, college state, or graduate medical training state.

The three groups of physicians also differed in terms of their location determinants. USFMGs who chose to establish their initial practice in an urban area reported that professional factors were most important in their location decision. USFMGs whose initial practice was located in suburban areas identified a mix of professional, familial, and personal preference factors. Rural USFMG practicing physicians put more emphasis on familial and social factors than on professional, career-related factors. Of the five factors perceived as important location determinants by USFMGs with rural practices, only one factor was career-related: "availability of clinical support facilities and personnel." The opportunity to join a desirable practice, however, was identified by all USFMG practicing physicians--rural, suburban, or urban--as the most important location determinant.

6.3.5 Multivariate Analysis of Practice Location Choice

Multivariate analysis was also used to evaluate the influence of several types of factors on the respondents' location decisions. Two outcomes were analyzed. The first was the type of community in which the initial practice was located (i.e., urban, suburban, or rural). The second was whether the USFMG located his/her practice in a county with a shortage area. Factors such as type of home community and characteristics of the medical education were taken into account. The results indicated that the type of home community was a significant predictor of the type of community in which the USFMG would practice, in that practice locations were more likely to be similar in character to the physician's home community. Specialty was also a significant determinant, since primary-care physicians were more likely to locate in non-urban areas. Finally, graduates of Mexican medical schools and those who received government financial assistance were less likely to locate in urban areas.

Practice in a county with a shortage area proved to be as difficult to predict as specialty choice. Most of the factors included in the analysis proved to have no effect on this type of location decision. There was, however, some limited evidence to indicate that USFMGs who came from rural communities and who received government financial aid were more likely to practice in or near a shortage area, while graduates of Mexican schools receiving such aid were less likely to do so.

6.4 Profile Conclusions

The medical education and practice continuum represents the prescribed paths that U.S. citizens who study medicine abroad must follow, in order to obtain medical licensure and establish a medical practice in the United States. Although this continuum is predetermined, at several points it provides alternative paths. The USFMG profile, which emerged in this study, is dynamic in nature. The dynamic characteristics of the profile stem from its movement along the medical education and practice continuum and from the incorporation, where appropriate, of alternative paths available to the USFMG population.

The emerging USFMG profile exhibits three distinct but sequential patterns of USFMG educational and professional characteristics and experiences. With movement along the medical education and practice continuum, the variability or heterogeneity of each pattern decreases, and USFMG educational and professional characteristics become more homogeneous, as well as less distinguishable, from the U.S. trained physician population (USMGs).

The USFMG population exhibits considerable variablility in foreign medical education. The dispersion of USFMGs in 24 countries and 54 medical schools--with different medical education programs--accounts in large part for this variability. The non-comparability among foreign medical education programs, as demonstrated in numerous studies, yields a population with varying degrees of medical "preparedness." Given their highly varied foreign medical education, the USFMG population resembles an aggregation of clusters (each cluster identified with countries offering comparable medical education), rather than a uniform medical manpower source.

The graduate medical training programs that most USFMGs attended in the United States and the requirements they had to meet (i.e., passage of the ECFMG examination) in order to enter these programs, acted as a "variance-reduction" force. Thus, USFMGs who participated in U.S..graduate medical training programs represented a more uniform group with regard to their medical education and qualifications. They were, however, treated by faculty and other students in graduate medical training programs as a distinct population, with somewhat inferior medical qualifications. Indeed, a majority of surveyed USFMGs, regardless of the foreign country in which they had studied reported that the major problem they encountered in their U.S. graduate medical training--the attitudes of faculty and other students toward them--was related to their USFMG status.

Once USFMGs completed their graduate medical training, their ability to meet subsequent medical requirements (i.e., FLEX, state licensure, and specialty board certification) made them less distinguishable from the U.S. trained physician population. Their entry into and integration in the U.S. medical care delivery system was complete.

As practicing physicians, USFMGs exhibited specialty, practice location, and practice type behavior that has been documented in previous studies as characteristic of U.S. trained physicians.

6.5 Specialty Choice and Practice Location: Conclusions and Directions for Future Research and Policy Development

While the results of the specialty choice and practice location multivariate analyses are preliminary, this study has documented the paths taken by USFMGs from point of entry into a foreign medical school through specialty choice and the establishment of a medical practice. This study has also developed a comprehensive profile of the USFMG population and has identified a series of variables and subpopulations of particular interest for future research and policy development.

Particularly relevant to future research and policy development are the following:

- variables shown to be related significantly to USFMG specialty choice and practice locations
- USFMGs who have chosen primary-care specialties and USFMGs who have established practices in shortage areas
- the extent to which USFMGs become fully integrated into the U.S. medical care delivery mainstream.

A wide range of variables was included in the study in order to develop a comprehensive USFMG profile along the medical education and practice continuum. The range and number of variables limited the degree to which detailed information could be obtained for each variable. In exploring these variables, however, the study found that a number of them merit further study because of their relationship with, and impact on, specialty choice and practice location decisions. These variables include, for instance, sources of financial aid that USFMGs use in financing their foreign medical education, and USFMG location patterns. Regarding financial aid sources, the study noted that federal financial aid was related to USFMGs eventual decision to practice in rural locations. Similarly, USFMGs' tendency to remain in their home state during educational and professional milestones and their tendency to establish medical practice in the state of their graduate medical training program, have important policy implications and merit more in-depth investigation.

Within the USFMG population, certain subpopulations are of particular interest to both health manpower researchers and policy-makers. Such subpopulations included USFMGs who chose to specialize in primary care and USFMGs who have established medical practices in urban and rural shortage areas. While this study identified general characteristics of these subpopulations, it also demonstrated that an in-depth examination of their specialty choice and practice location decisions will require a more focused methodology. Given the distribution of these subpopulations within the USFMG universe, future research studies must target their sampling design specifically to these subpopulations. A sampling design using other variables for stratification purposes will undersample these two important groups, and thus limit the usefulness of the analysis.

Finally, to determine the status of USFMGs and their contribution to the U.S. medical care system, USFMGs' specialty choice and practice location characteristics must be explored within a comparative context. USFMGs must be examined in comparison to U.S. trained physicians (USMGs). Such a comparison will assist in determining whether USFMGs who meet the requirements of the American medical education and practice systems become fully integrated into the American medical care mainstream.

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STUDY OF FUNCTIONING AND LOCATION OF U.S. CITIZEN FOREIGN MEDICAL GRADUATES WITHIN THE U.S. MEDICAL CARE SYSTEM

Final Report
Volume II

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Submitted to:

May 1983

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Appendix A:

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Appendix B:

Cover Letters

and

Questionnaires

POLICY ANALYSIS INC

1577 BEACON STREET
BROOKLINE, MASSACHUSETTS 02146
617-232-4400

Dear Doctor:

You were randomly selected to participate in a national study of American citizens who graduated from foreign medical schools between 1970-1979. Presently, little or no base line data exist on the specialty distribution and practice location of USFMGs or on the flow of USFMGs from undergraduate medical education overseas to ultimate licensure in the U.S. Lacking such information, it is difficult for health planners and policy makers to estimate the likely impact of USFMGs upon the supply of physician manpower in the U.S. in the immediate future.

The Division of Medicine, Health Resources Administration has funded Policy Analysis of Brookline, Massachusetts to conduct a national study of specialty choice and practice location of U.S. citizens who graduated from foreign medical schools between 1970 and 1979 and who successfully entered the U.S. medical care delivery system. This study is authorized by Section 708(b)(2) of the Public Health Service Act.

To obtain this information, Policy Analysis will survey a sample of 1,000 USFMGs who graduated from foreign medical schools between 1970-1979 and who are currently interns, residents or practicing physicians.

Attached please find a questionnaire that Policy Analysis researchers have constructed. The questionnaire seeks data on your socioeconomic background, pre-medical, medical and graduate medical education, choice of specialty, practice type, and location choices. All responses to the attached questionnaire will be kept strictly confidential. Survey results will be analyzed and reported in tabular form only and no information will be available to link individual responses to names. While your response is voluntary, your cooperation is needed to make the results of the study comprehensive, accurate and timely.

Please complete the questionnaire and return it in the enclosed self-addressed envelope by August 14, 1982.

If you have any questions concerning either the survey or the questionnaire, please contact me at the above address.

Sincerely,

Ester G Smith

Ester G. Smith, Ph.D.
Project Director

POLICY ANALYSIS INC

1577 BEACON STREET
BROOKLINE, MASSACHUSETTS 02146
617-232-4400

Dear Doctor:

In the past few weeks we at Policy Analysis forwarded you a questionnaire to solicit your participation in a survey of the education and career paths, specialty choice, and practice location of U.S. citizens who graduated from foreign medical schools between 1970-1979. This survey is authorized by Section 708(b)(2) of the Public Health Service Act and is being conducted under contract to the Division of Medicine, Health Resources Administration (HRA). As we have not yet heard from you, we are writing again to ask for your response to the enclosed questionnaire.

You were randomly selected from the AMA's Masterfile of USFMGs. To assure the validity of the survey findings, we need to obtain responses from everyone included in the sample. Your participation is, therefore, especially important to the study. The more we know about the specialty choice and practice locations of USFMGs, the better we will be able to provide HRA with policy recommendations regarding the population of USFMGs.

All responses to the attached questionnaire will be kept strictly confidential. Survey results will be analyzed and reported in tabular form only and no information will be available to link individual responses to names. While you are not required to respond, your cooperation is needed to make the results of the study comprehensive, accurate and timely.

Please complete the questionnaire and return it in the enclosed self-addressed envelope by September 4, 1982.

If you have any questions concerning either the survey or the questionnaire, please contact me at the above address.

Thank you for your kind assistance and cooperation.

Sincerely,

Ester G Smith

Ester G. Smith, Ph.D.
Project Director

FOR OFFICE USE ONLY

Quest. No.____________

OMB No. 09350061

Expiration Date 12/82

____

SURVEY OF 1970-1979 U.S. GRADUATES OF FOREIGN MEDICAL SCHOOLS

I. DEMOGRAPHIC CHARACTERISTICS

The questions included in this section relate to your socio-economic status before you started your undergraduate college education.

1. In what state did you live most of the time before you went to college?

____

2. How large was the community in which you lived for the longest period of time in that state? (CIRCLE ONE ONLY)

Fewer than 10,000 inhabitants	1
10,000 - 24,999 inhabitants	2
25,000 - 49,999 inhabitants	3
50,000 - 249,999 inhabitants	4
250,000 - 499,999 inhabitants	5
500,000 - 999,999 inhabitants	6
1,000,000 - 4,999,999 inhabitants	7
5,000,000 or more inhabitants	8

2a. Would you characterize this community as: (CIRCLE ONE ONLY)

Urban	1
Suburban	2
Rural	3

3. What were the highest academic degrees that your father and mother received? (CIRCLE ONE FOR EACH PARENT)

	Father	Mother
High school diploma	1	1
Associate degree	2	2
Bachelor's	3	3
Master's	4	4
Doctorate (Ph.D.)	5	5
Professional degree (SPECIFY:____________)	6	6
Other (SPECIFY:____________)	7	7
None of the above	0	0

4. What were your parents' occupations when you entered college? (RECORD FOR EACH PARENT)

Father:____
Mother:____

5. Please describe your marital status during each of the periods specified below. (CIRCLE ONE FOR EACH)

	At Entry to Medical School	At Entry to Graduate Medical Training	Currently (if completed training)
Never Married..................	1	1	1
Married........................	2	2	2
Separated......................	3	3	3
Divorced.......................	4	4	4
Widowed........................	5	5	5

6. (If currently or previously married)
Did your family include one or more children at any time while you were... (CIRCLE ONE FOR EACH)

	Yes	No
In medical school............................	1	2
In graduate medical training.................	1	2
Currently (if completed graduate training)..	1	2

7. What is your ethnic/racial background? (CIRCLE ONE ONLY)

White, not of Hispanic origin.................... 1
Black, not of Hispanic origin.................... 2
Hispanic... 3
American Indian or Alaskan Native................ 4
Asian or Pacific Islander........................ 5

II. PRE-MEDICAL EDUCATION

This section deals with your undergraduate college education.

1. When did you complete your undergraduate college education?

Year: 19__

2. Did you attend..... (CIRCLE ONE ONLY)

A state undergraduate college/university.......... 1
A private undergraduate college/university........ 2

2a. In what state is this college/university located?

____

3. What (was/were) your major area(s) of study?

Major areas:________________ ____________________

4. What was your grade point average (GPA) at graduation from that college/university? (FILL IN BLANK AND CIRCLE ONE ONLY)

Less than 2.0 out of_____............... 1
2.0 to 2.49 out of_____................. 2
2.5 to 2.99 out of_____................. 3
3.0 to 3.49 out of_____................. 4
3.5 to 4.0 out of_____.................. 5

5. How many times did you take the Medical College Admissions Test (MCAT)?

_____ times

5a. What was your highest MCAT score? (CIRCLE ONE ONLY)

400-500.................. 1
501-600.................. 2
601-700.................. 3
701-800.................. 4

5b. In what year did you obtain your highest MCAT score?

19___

6. In what year(s) did you attempt to gain admission to a U.S. medical school?

19___, 19___, 19___, 19___, 19___, 19___

7. On the average, to how many U.S. medical schools did you apply in any of these years?

_____ schools

III. FOREIGN MEDICAL EDUCATION

The questions that follow inquire into your selection of a foreign medical school.

1. To how many foreign medical schools did you apply?

_____ schools

2. To how many foreign medical schools were you accepted?

_____ schools

3. Which medical school(s) did you attend? (LIST NAME OF SCHOOL(S) AND COUNTRY(IES))

Name of School(s)	Country(ies)
____________________	________________
____________________	________________
____________________	________________
____________________	________________

4. How did you finance your foreign medical education? (CIRCLE ALL THAT APPLY)

Received U.S. federal financial aid............... 1
Received state financial assistance............... 2
Personal savings.................................. 3
Parents assisted me............................... 4
Spouse assisted me................................ 5
Other (SPECIFY)________________________________
____ 6

IV. MEDICAL SCHOOL CHARACTERISTICS

This section deals with the characteristics and curriculum of the foreign medical school in which you studied.

1. How many years did you attend this medical school?

_____ years

2. What was your overall grade point average (GPA) in this foreign medical school? (FILL IN BLANK AND CIRCLE ONE ONLY)

Less than 2.0 out of _____.............. 1
2.0 to 2.49 out of ____................. 2
2.5 to 2.99 out of ____................. 3
3.0 to 3.49 out of_____................. 4
3.5 to 4.0 out of _____................. 5

3. Approximately what percent of the students in your class were Americans?

_____ %

4. Did this school have on-campus clinical facilities?

Yes.................. 1
No................... 2

5. Did you receive any clinical training in an American hospital during the period of your foreign medical education?

Yes.................. 1
No (SKIP TO Q..6)... 2

5a. Who arranged for clinical training in an American hospital?

I arranged it....................... 1
Foreign medical school
 arranged it........................ 2
Other (SPECIFY)____________________
___________________________________ 3

5b. Where did you receive this clinical training?

Name of hospital:______________________________
City:____
State:____

6. How would you rate the quality of the foreign medical education you received in that school in each of the following areas?

	Excellent	Good	Fair	Poor
Facilities........................	1	2	3	4
Equipment.........................	1	2	3	4
Faculty...........................	1	2	3	4
Curriculum........................	1	2	3	4
Clinical training.................	1	2	3	4

7. What was the cost of your foreign medical education for the last year of medical school? (IDENTIFY YEAR AND RECORD TOTAL COST)

Total cost: $________________ Year: 19__

V. ATTEMPTS TO TRANSFER TO A U.S. MEDICAL SCHOOL

This section deals with the Coordinated Transfer System (COTRANS, which provides a mechanism for U.S. students at foreign schools to transfer with advanced standing to an accredited U.S. medical school. The following questions inquire into any attempts which you might have made to transfer through this program to a U.S. medical school.

A. COORDINATED TRANSFER APPLICATION SYSTEM (COTRANS)

1. Did you attempt during your studies in the foreign medical school to transfer to medical school in the United States through COTRANS?

Yes.............................. 1
No (SKIP TO SECTION B, Q. 1)...... 2

2. Were you accepted for transfer to any of the U.S. medical schools to which you applied?

Yes.............................. 1
No (SKIP TO B, Q. 1).............. 2

2a. (IF YES)

Why did you decide not to transfer to a U.S. medical school?

Could not gain admission to any of the medical schools of my choice.................................. 1
Could not carry the financial burden of medical education in the U.S.................................. 2
Other (SPECIFY)____ 3
____

B. FIFTH PATHWAY

The Fifth Pathway is an AMA sponsored program that permits U.S. citizen foreign medical students to substitute a year of supervised clinical training under the direction of an accredited U.S. medical school for the social services frequently required by a foreign school.

This section includes questions about the Fifth Pathway and whether you participated in this program.

1. Did you take part in the Fifth Pathway program?

Yes...................... 1
No (SKIP TO C, Q. 1)..... 2

1a. (IF YES)

When did you participate in this program?

19__

2. Which U.S. hospital supervised you in this program?

Name of Hospital:________________________________
City:____
State:____

C. THE ECFMG EXAMINATION

This section inquires into your experiences in taking the Educational Commission for Foreign Medical Graduates (ECFMG) examination, which is required in order to establish eligibility for entering a U.S. graduate medical education program.

1. Did you ever take the ECFMG exam?

Yes............................ 1
No (SKIP TO VI, Q. 1)......... 2

2. (IF YES)

In which year did you receive the ECFMG Certification?
(RECORD YEAR)

19__

2a. How many times did you take the ECFMG exam?

______________ times

3. What was your highest ECFMG score?

____

VI. ENTRY INTO THE U.S. MEDICAL DELIVERY SYSTEM

This section covers the different routes you might have taken after you completed your foreign medical education. Answer only those sections which are relevant to the route(s) which you followed.

A. GRADUATE MEDICAL TRAINING

1. Did you obtain your graduate medical training....(CIRCLE ONE ONLY)

Only in the United States...................... 1
Only in country of foreign medical education (SKIP TO Q. 9)..................... 2
Both in country of foreign medical education and in the U.S.................... 3
No graduate training obtained (SKIP TO B, Q. 1) 4

2. (IF U.S. GRADUATE MEDICAL TRAINING)

In how many graduate training programs (did/have) you participate(d)?

__________ programs

2a. In which graduate training program (did/have) you (participate/participated) for the longest period?

Name of hospital:______________________________
City/Town:____________________________________
County:______________________________________
State:_______________________________________

3. When did you start this graduate medical training program?

19__

3a. When (did/will) you complete this graduate medical training?

19__

4. Did you take part in the National Intern and Resident Matching Program?

Yes (SKIP TO Q. 5)................. 1
No................................. 2

4a. (If not)
Why didn't you take part in this program?

____
____
____

5. In what specialty(ies) did you receive your graduate medical training?

__________________, __________________, __________________

6. How important was each of the following in selecting your major specialty? (CIRCLE ONE FOR EACH FACTOR)

	Very Important	Important	Fairly Important	Not At All Important
A. Encouragement of others who trained in this specialty........................	1	2	3	4
B. Encouragement from chief of medicine during clinical training........................	1	2	3	4
C. Encouragement of other medical faculty during clinical training...............	1	2	3	4
D. Specialty is more intellectually stimulating than other specialties..........	1	2	3	4
E. Like the patient contact associated with this specialty.......................	1	2	3	4
F. Demand for physicians in this specialty..................	1	2	3	4
G. Income potential of specialty....................	1	2	3	4
H. This specialty is most appropriate for practice in rural area..................	1	2	3	4
I. Other (SPECIFY)	1	2	3	4

____

____

6a. Which one of these factors was the major reason for selecting this specialty? (CIRCLE ONE ONLY)

A B C D E F G H I

7. Did you change your specialty(ies) during the period of your graduate training?

Yes...................... 1
No...................... 2

8. Did you encounter any difficulties or problems in your graduate training program in the following areas which, in your opinion, can be attributed to your foreign medical education or USFMG status? (CIRCLE ALL THAT APPLY)

Knowledge of basic medical science	01
Performance of general hospital duties	02
Patient history taking	03
Conduct of physical examinations	04
Physical-medical diagnosis	05
Doctor-patient relationships	06
Attitudes of faculty	07
Attitudes of hospital staff	08
Attitudes of residents who graduated from foreign medical schools	09
Other (SPECIFY)____________________	10

(SKIP TO B. Q. 1)

9. (IF TRAINED ABROAD)

In which country did you receive your graduate medical training?

____

10. What specialty(ies) did you choose?

____________________, ____________________, ____________________

11. Why did you prefer to train in that country than in the United States? (CIRCLE ALL THAT APPLY)

Could not get into a preferred residency program in the U.S.	1
Country of medical education offered a good program in specialty of choice	2
Other (SPECIFY)____________________	3

12. How long was your graduate medical training?

_____ years

13. When did you complete your graduate medical training?

19__

14. When did you return to the United States to practice medicine?

19__

B. LICENSURE

The following questions deal with your experiences in taking the Federation Licensing Examination (FLEX).

1. Do you hold any full, unlimited state licenses to practice medicine?

Yes................. 1
No (SKIP TO Q. 3)... 2

2. When did you obtain your first unlimited license?

19__

2a. In what state did you obtain your first unlimited license?

____

3. In total, how many times did you take the Federation Licensing Examination (FLEX) (if licensed, include the time you received a passing score)?

_____ times

3a. When was the first time you took the FLEX?

19__

(IF LICENSED, SKIP TO C. Q. 1)

4. Subsequent to obtaining full, unlimited licensure, do you plan... (RECORD "YES" OR "NO" FOR EACH CATEGORY)

	Yes	No
To locate your practice in a different state other than your current state................................	1	2
To locate your practice in a different community in state of current residence................................	1	2
To start an office-based practice..........................	1	2
To find a different hospital-based position................	1	2

C. SPECIALTY BOARD EXAMINATION

1. Are you currently Specialty Board certified?

Yes............................1
No (SKIP TO SECTION VII).......2

1a. (IF YES)

When did you obtain Board certification for your major specialty?

19__

2. How many times did you take the Specialty Board examinations for your major specialty?

____________ times

3. In which medical specialty societies are you a member?

____

____

____

VII. LOCATION AND PRACTICE PLANS

1. Where do you plan to practice when you complete your graduate medical training? (CIRCLE ONE ONLY)

Same state and community (SKIP TO Q. 3)................ 1
Same state but different community..................... 2
Different state (SPECIFY WHICH)_ ____________________
____ 3
Don't know... 4

2. In what type of community would you like to practice after you complete your graduate medical training? (CIRCLE ONE)

Urban.................. 1
Suburban............... 2
Rural.................. 3

3. What type of practice would you choose after you complete your graduate training? (CIRCLE ONE ONLY)

Office-based, patient care practice.................... 1
Hospital-based, patient care practice.................. 2
Medical teaching....................................... 3
Administration... 4
Research... 5
Other (SPECIFY)_______________________________________ 6
____

4. How important do you consider the following factors in deciding where to practice after you complete your graduate training? (CIRCLE ONE FOR EACH FACTOR)

	Very Important	Important	Fairly Important	Not at all Important
General economic conditions in area........	1	2	3	4
Cultural and social opportunities..........	1	2	3	4
Educational opportunities for children.....	1	2	3	4
Availability of hospital appointments......	1	2	3	4
Preference of spouse.......................	1	2	3	4
Openings in specialty......................	1	2	3	4
Area's need for a physician................	1	2	3	4
Opportunity to join other physician or group................................	1	2	3	4
Born or raised in area.....................	1	2	3	4
Place of residency.........................	1	2	3	4
Medical school appointment.................	1	2	3	4
Income potential...........................	1	2	3	4

THANK YOU

FOR OFFICE USE ONLY

Quest. No.__________

OMB No. 09350061

Expiration Date 12/82

____

SURVEY OF 1970-1979 U.S. GRADUATES
OF FOREIGN MEDICAL SCHOOLS

I. DEMOGRAPHIC CHARACTERISTICS

The questions included in this section relate to your socio-economic status before you started your undergraduate college education.

1. In what state did you live most of the time before you went to college?

____

2. How large was the community in which you lived for the longest period of time in that state? (CIRCLE ONE ONLY)

Fewer than 10,000 inhabitants	1
10,000 - 24,999 inhabitants	2
25,000 - 49,999 inhabitants	3
50,000 - 249,999 inhabitants	4
250,000 - 499,999 inhabitants	5
500,000 - 999,999 inhabitants	6
1,000,000 - 4,999,999 inhabitants	7
5,000,000 or more inhabitants	8

2a. Would you characterize this community as: (CIRCLE ONE ONLY)

Urban	1
Suburban	2
Rural	3

3. What were the highest academic degrees that your father and mother received? (CIRCLE ONE FOR EACH PARENT)

	Father	Mother
High school diploma	1	1
Associate degree	2	2
Bachelor's	3	3
Master's	4	4
Doctorate (Ph.D.)	5	5
Professional degree (SPECIFY:____________________)	6	6
Other (SPECIFY:____________________)	7	7
None of the above	0	0

4. What were your parents' occupations when you entered college? (RECORD FOR EACH PARENT)

Father:__________________________________
Mother:__________________________________

5. Please describe your marital status during each of the periods specified below. (CIRCLE ONE FOR EACH)

	At Entry to Medical School	At Entry to Graduate Medical Training	Currently (if completed training)
Never Married	1	1	1
Married	2	2	2
Separated	3	3	3
Divorced	4	4	4
Widowed	5	5	5

6. (If currently or previously married)
Did your family include one or more children at any time while you were... (CIRCLE ONE FOR EACH)

	Yes	No
In medical school	1	2
In graduate medical training	1	2
Currently (if completed graduate training)	1	2

7. What is your ethnic/racial background? (CIRCLE ONE ONLY)

White, not of Hispanic origin	1
Black, not of Hispanic origin	2
Hispanic	3
American Indian or Alaskan Native	4
Asian or Pacific Islander	5

II. PRE-MEDICAL EDUCATION

This section deals with your undergraduate college education.

1. When did you complete your undergraduate college education?

Year: 19__

2. Did you attend..... (CIRCLE ONE ONLY)

A state undergraduate college/university	1
A private undergraduate college/university	2

2a. In what state is this college/university located?

____

3. What (was/were) your major area(s) of study?

Major areas:________________ ____________________

4. What was your grade point average (GPA) at graduation from that college/university? (FILL IN BLANK AND CIRCLE ONE ONLY)

Less than 2.0 out of_____................ 1
2.0 to 2.49 out of_____.................. 2
2.5 to 2.99 out of_____.................. 3
3.0 to 3.49 out of_____.................. 4
3.5 to 4.0 out of_____................... 5

5. How many times did you take the Medical College Admissions Test (MCAT)?

_____ times

5a. What was your highest MCAT score? (CIRCLE ONE ONLY)

400-500.................. 1
501-600.................. 2
601-700.................. 3
701-800.................. 4

5b. In what year did you obtain your highest MCAT score?

19___

6. In what year(s) did you attempt to gain admission to a U.S. medical school?

19___, 19___, 19___, 19___, 19___, 19___

7. On the average, to how many U.S. medical schools did you apply in any of these years?

_____ schools

III. FOREIGN MEDICAL EDUCATION

The questions that follow inquire into your selection of a foreign medical school.

1. To how many foreign medical schools did you apply?

_____ schools

2. To how many foreign medical schools were you accepted?

_____ schools

3. Which medical school(s) did you attend? (LIST NAME OF SCHOOL(S) AND COUNTRY(IES))

Name of School(s)	Country(ies)

4. How did you finance your foreign medical education? (CIRCLE ALL THAT APPLY)

Received U.S. federal financial aid............... 1
Received state financial assistance............... 2
Personal savings.................................. 3
Parents assisted me............................... 4
Spouse assisted me................................ 5
Other (SPECIFY)_______________________________
____ 6

IV. MEDICAL SCHOOL CHARACTERISTICS

This section deals with the characteristics and curriculum of the foreign medical school in which you studied.

1. How many years did you attend this medical school?

_____ years

2. What was your overall grade point average (GPA) in this foreign medical school? (FILL IN BLANK AND CIRCLE ONE ONLY)

Less than 2.0 out of _____.............. 1
2.0 to 2.49 out of ____................. 2
2.5 to 2.99 out of ____................. 3
3.0 to 3.49 out of_____................. 4
3.5 to 4.0 out of _____................. 5

3. Approximately what percent of the students in your class were Americans?

_____ %

4. Did this school have on-campus clinical facilities?

Yes.................. 1
No................... 2

5. Did you receive any clinical training in an American hospital during the period of your foreign medical education?

Yes.................. 1
No (SKIP TO Q. 6)... 2

5a. Who arranged for clinical training in an American hospital?

I arranged it........................ 1
Foreign medical school
arranged it.......................... 2
Other (SPECIFY)____________________
___________________________________ 3

5b. Where did you receive this clinical training?

Name of hospital:_____________________________
City:____
State:____

6. How would you rate the quality of the foreign medical education you received in that school in each of the following areas?

	Excellent	Good	Fair	Poor
Facilities...........................	1	2	3	4
Equipment...........................	1	2	3	4
Faculty...........................	1	2	3	4
Curriculum...........................	1	2	3	4
Clinical training..................	1	2	3	4

7. What was the cost of your foreign medical education for the last year of medical school? (IDENTIFY YEAR AND RECORD TOTAL COST)

Total cost: $_______________ Year: 19__

V. ATTEMPTS TO TRANSFER TO A U.S. MEDICAL SCHOOL

This section deals with the Coordinated Transfer System (COTRANS) which provides a mechanism for U.S. students at foreign schools to transfer with advanced standing to an accredited U.S. medical school. The following questions inquire into any attempts which you might have made to transfer through this program to a U.S. medical school.

A. COORDINATED TRANSFER APPLICATION SYSTEM (COTRANS)

1. Did you attempt during your studies in the foreign medical school to transfer to medical school in the United States through COTRANS?

Yes.............................. 1
No (SKIP TO SECTION B, Q. 1)...... 2

2. Were you accepted for transfer to any of the U.S. medical schools to which you applied?

Yes.............................. 1
No (SKIP TO B, Q. 1).............. 2

2a. (IF YES)

Why did you decide not to transfer to a U.S. medical school?

Could not gain admission to any of the medical schools of my choice.................................. 1
Could not carry the financial burden of medical education in the U.S.................................. 2
Other (SPECIFY)______________________________ 3
____

B. FIFTH PATHWAY

The Fifth Pathway is an AMA sponsored program that permits U.S. citizen foreign medical students to substitute a year of supervised clinical training under the direction of an accredited U.S. medical school for the social services frequently required by a foreign school.

This section includes questions about the Fifth Pathway and whether you participated in this program.

1. Did you take part in the Fifth Pathway program?

Yes...................... 1
No (SKIP TO C, Q. 1)..... 2

1a. (IF YES)

When did you participate in this program?

19__

2. Which U.S. hospital supervised you in this program?

Name of Hospital:______________________________
City:____
State:____

C. THE ECFMG EXAMINATION

This section inquires into your experiences in taking the Educational Commission for Foreign Medical Graduates (ECFMG) examination, which is required in order to establish eligibility for entering a U.S. graduate medical education program.

1. Did you ever take the ECFMG exam?

Yes........................... 1
No (SKIP TO VI, Q. 1)......... 2

2. (IF YES)

In which year did you receive the ECFMG Certification? (RECORD YEAR)

19__

2a. How many times did you take the ECFMG exam?

______________ times

3. What was your highest ECFMG score?

____

VI. ENTRY INTO THE U.S. MEDICAL DELIVERY SYSTEM

This section covers the different routes you might have taken after you completed your foreign medical education. Answer only those sections which are relevant to the route(s) which you followed.

A. GRADUATE MEDICAL TRAINING

1. Did you obtain your graduate medical training....(CIRCLE ONE ONLY)

Only in the United States...................... 1
Only in country of foreign medical education (SKIP TO Q. 9).................... 2
Both in country of foreign medical education and in the U.S.................... 3
No graduate training obtained (SKIP TO B, Q. 1) 4

2. (IF U.S. GRADUATE MEDICAL TRAINING)
In how many graduate training programs (did/have) you participate(d)?

__________ programs

2a. In which graduate training program (did/have) you (participate/participated) for the longest period?

Name of hospital:______________________________
City/Town:______________________________
County:______________________________
State:______________________________

3. When did you start this graduate medical training program?

19__

3a. When (did/will) you complete this graduate medical training?

19__

4. Did you take part in the National Intern and Resident Matching Program?

Yes (SKIP TO Q. 5)................. 1
No................................ 2

4a. (If not)
Why didn't you take part in this program?

____
____
____

5. In what specialty(ies) did you receive your graduate medical training?

__________________, __________________, __________________

6. How important was each of the following in selecting your major specialty? (CIRCLE ONE FOR EACH FACTOR)

	Very Important	Important	Fairly Important	Not At All Important
A. Encouragement of others who trained in this specialty........................	1	2	3	4
B. Encouragement from chief of medicine during clinical training........................	1	2	3	4
C. Encouragement of other medical faculty during clinical training...............	1	2	3	4
D. Specialty is more intellectually stimulating than other specialties..........	1	2	3	4
E. Like the patient contact associated with this specialty.......................	1	2	3	4
F. Demand for physicians in this specialty..................	1	2	3	4
G. Income potential of specialty....................	1	2	3	4
H. This specialty is most appropriate for practice in rural area..................	1	2	3	4
I. Other (SPECIFY)	1	2	3	4

____

____

6a. Which one of these factors was the major reason for selecting this specialty? (CIRCLE ONE ONLY)

A B C D E F G H I

7. Did you change your specialty(ies) during the period of your graduate training?

Yes......................	1
No......................	2

8. Did you encounter any difficulties or problems in your graduate training program in the following areas which, in your opinion, can be attributed to your foreign medical education or USFMG status? (CIRCLE ALL THAT APPLY)

Knowledge of basic medical science	01
Performance of general hospital duties	02
Patient history taking	03
Conduct of physical examinations	04
Physical-medical diagnosis	05
Doctor-patient relationships	06
Attitudes of faculty	07
Attitudes of hospital staff	08
Attitudes of residents who graduated from foreign medical schools	09
Other (SPECIFY)____________________	10

(SKIP TO B. Q. 1)

9. (IF TRAINED ABROAD)

In which country did you receive your graduate medical training?

____

10. What specialty(ies) did you choose?

________________, ________________, ________________

11. Why did you prefer to train in that country than in the United States? (CIRCLE ALL THAT APPLY)

Could not get into a preferred residency program in the U.S.	1
Country of medical education offered a good program in specialty of choice	2
Other (SPECIFY)____________________	3

12. How long was your graduate medical training?

_____ years

13. When did you complete your graduate medical training?

19__

14. When did you return to the United States to practice medicine?

19__

B. LICENSURE

The following questions deal with your experiences in taking the Federation Licensing Examination (FLEX).

1. Do you hold any full, unlimited state licenses to practice medicine?

Yes................. 1
No (SKIP TO Q. 3)... 2

2. When did you obtain your first unlimited license?

19__

2a. In what state did you obtain your first unlimited license?

____

3. In total, how many times did you take the Federation Licensing Examination (FLEX) (if licensed, include the time you received a passing score)?

_____ times

3a. When was the first time you took the FLEX?

19__

(IF LICENSED, SKIP TO C. Q. 1)

4. Subsequent to obtaining full, unlimited licensure, do you plan... (RECORD "YES" OR "NO" FOR EACH CATEGORY)

	Yes	No
To locate your practice in a different state other than your current state............................	1	2
To locate your practice in a different community in state of current residence............................	1	2
To start an office-based practice...........................	1	2
To find a different hospital-based position...............	1	2

C. SPECIALTY BOARD EXAMINATION

1. Are you currently Specialty Board certified?

Yes............................1
No (SKIP TO SECTION VII).......2

1a. (IF YES)

When did you obtain Board certification for your major specialty?

19__

2. How many times did you take the Specialty Board examinations for your major specialty?

_______________ times

3. In which medical specialty societies are you a member?

____

____

____

VII. LOCATION AND PRACTICE

This section deals with first, intermediate and current practice locations and the practice characteristics.

A. INITIAL LOCATION AND PRACTICE

1. After you completed your graduate medical training, in which community and state did you practice?

Community:_________________________
County:___________________________
State:____________________________

2. How large is this community? (CIRCLE ONE ONLY)

Fewer than 10,000 inhabitants................. 1
10,000-24,999 inhabitants..................... 2
25,000-49,999 inhabitants..................... 3
50,000-249,000 inhabitants.................... 4
250,000-499,999 inhabitants................... 5
500,000-999,999 inhabitants................... 6
1,000,000-4,999,999 inhabitants............... 7
5,000,000 or more inhabitants................. 8

3. Would you classify the community where you worked as... (CIRCLE ONE ONLY)

Urban	1
Suburban	2
Rural	3

4. How important was each of the following factors in deciding where to locate your practice after you complete your graduate training? (CIRCLE ONE FOR EACH FACTOR)

		Very Important	Important	Fairly Important	Not at All Important
A.	Opportunity to join a desirable practice	1	2	3	4
B.	Availability of clinical support facilities and personnel	1	2	3	4
C.	Opportunity for regular contact with medical school and medical center	1	2	3	4
D.	Opportunity for regular contact with other physicians	1	2	3	4
E.	Hospital offers opportunity for private practice	1	2	3	4
F.	Access to continuing education	1	2	3	4
G.	Income potential	1	2	3	4
H.	Community efforts to recruit physicians	1	2	3	4
I.	Community acceptance of USFMGs	1	2	3	4
J.	Availability of loans for beginning practice	1	2	3	4
K.	Climate or geographic features of area	1	2	3	4
L.	Preference for urban/suburban/rural living	1	2	3	4
M.	Recreational and sports facilities available in area	1	2	3	4
N.	Quality of education system for children	1	2	3	4
O.	Opportunities for social life	1	2	3	4
P.	Cultural advantages	1	2	3	4
Q.	Prosperity of community	1	2	3	4
R.	Prospect of being more influential in community affairs	1	2	3	4
S.	Influence of spouse	1	2	3	4
T.	Influence of family and friends	1	2	3	4
U.	Having been brought up in such a community	1	2	3	4
V.	Having gone to college in area	1	2	3	4
W.	Having gone through graduate training or military service in area	1	2	3	4
X.	Other (SPECIFY)______________________________	1	2	3	4

4a. Which one of these factors was **most** important in your decision to locate your practice in that area after you completed your graduate training? (CIRCLE ONE ONLY)

A B C D E F G H I J K L M N O P Q R S T U V W X

5. How long have you practiced in that area?

_____ years

6. After your completion of graduate medical training, which of the following represented your major type of practice? (CIRCLE ALL THAT APPLY)

Patient Care:

Office-based, patient care practice.......................... 1
Hospital-based, patient care practice (SKIP TO Q. 8)........ 2

Non-Patient Care:

Medical teaching (SKIP TO Q. 11)............................ 3
Administration (SKIP TO Q. 11).............................. 4
Research (SKIP TO Q. 11).................................... 5
Other (SPECIFY)____
____ 6

7. (IF IN OFFICE-BASED PRACTICE)

Which of the following best describes your type of practice after you completed graduate training? (CIRCLE ONE ONLY)

Solo practice.. 1
Two-person partnership................................... 2
Informal association..................................... 3
Group practice (prepaid)................................. 4
Group practice (not prepaid)............................. 5
Other (SPECIFY)____
____ 6

(SKIP TO Q. 9)

8. (IF IN HOSPITAL-BASED PRACTICE)

In what hospital (is/was) your practice located?

Name of Hospital:______________________
City/Town:_____________________________
State:_________________________________

9. How would you characterize the largest group of the patient population in your initial practice?

A. Ethnic/racial background: (CIRCLE ALL THAT APPLY)

White, not of Hispanic origin............ 1
Black, not of Hispanic origin............ 2
Hispanic................................. 3
American Indian or Alaskan Native........ 4
Asian or Pacific Islander................ 5

B. Socio-economic status: (CIRCLE ALL THAT APPLY)

Lower class........................... 1
Lower middle class.................... 2
Middle class.......................... 3
Upper middle class.................... 4
Upper class........................... 5

10. Are you still working in that community?

Yes........................... 1
No (SKIP TO Q. 11)............ 2

10a. Are you currently in the same practice?

Yes........................... 1
No............................ 2

11. What (is/was) your net income during the last year of your initial practice? (CIRCLE ONE ONLY AND RECORD YEAR)

19__
Less than $25,000.................. 1
$25,000-49,999..................... 2
$50,000-74,999..................... 3
$75,000-99,999..................... 4
$100,000-124,999................... 5
$125,000-149,999................... 6
$150,000 or more................... 7

(IF LOCATION AND PRACTICE DID NOT CHANGE SINCE COMPLETION OF GRADUATE TRAINING, SKIP TO VIII, Q. 1)

B. CURRENT LOCATION AND PRACTICE

1. In what state is your practice currently located?

____

2. When did you begin practicing in this state?

19___

3. How large is the community in which you currently work? (CIRCLE ONE ONLY)

Fewer than 10,000 inhabitants.................... 1
10,000-24,999 inhabitants........................ 2
25,000-49,999 inhabitants........................ 3
50,000-249,999 inhabitants....................... 4
250,000-499,999 inhabitants...................... 5
500,000-999,999 inhabitants...................... 6
1,000,000-4,999,999 inhabitants.................. 7
5,000,000 or more inhabitants.................... 8

4. Would you classify this community as... (CIRCLE ONE ONLY)

Urban.................... 1
Suburban................. 2
Rural.................... 3

5. In what county is this community located?

____

6. How important were the following factors in your decision to move your practice to this location? (CIRCLE ONE FOR EACH FACTOR)

		Very Important	Important	Fairly Important	Not at All Important
A.	Opportunity to join a desirable practice	1	2	3	4
B.	Availability of clinical support facilities and personnel	1	2	3	4
C.	Opportunities for regular contact with medical school and medical center	1	2	3	4
D.	Opportunity for regular contact with other physicians	1	2	3	4
E.	Hospital offered opportunity for private practice	1	2	3	4
F.	Access to continuing education	1	2	3	4
G.	Income potential	1	2	3	4
H.	Community efforts to recruit physicians	1	2	3	4
I.	Community acceptance of USFMG	1	2	3	4
J.	Availability of loans for beginning practice	1	2	3	4
K.	Climate or geographic features of area	1	2	3	4
L.	Preference for urban/suburban/rural living	1	2	3	4
M.	Recreational and sports facilities available in area	1	2	3	4
N.	Quality of education system for children	1	2	3	4
O.	Opportunities for social life	1	2	3	4
P.	Cultural advantages	1	2	3	4
Q.	Prosperity of community	1	2	3	4
R.	Prospect of being more influential in community affairs	1	2	3	4
S.	Influence of spouse	1	2	3	4
T.	Influence of family and friends	1	2	3	4
U.	Having been brought up in such a community	1	2	3	4
V.	Having gone to college in area	1	2	3	4
W.	Having gone through graduate training or military service in area	1	2	3	4
X.	Other (SPECIFY)____________________	1	2	3	4

6a. Which one of these factors was most important in your decision to practice in this area? (CIRCLE ONE ONLY)

A B C D E F G H I J K L M N O P Q R S T U V W X

201

202

7. How would you describe your major current practice? (CIRCLE ALL THAT APPLY)

Patient Care:

Office-based, patient care practice.................... 1
Hospital-based, patient care practice (SKIP TO Q. 9)... 2

Non-Patient Care:

Medical teaching (SKIP TO Q. 11)....................... 3
Administration (SKIP TO Q. 11)......................... 4
Research (SKIP TO Q. 11)............................... 5
Other (SPECIFY)____
____ 6

8. (IF IN OFFICE-BASED PRACTICE)

Which of the following best describes your major current type of practice? (CIRCLE ONE ONLY)

Solo practice.................................. 1
Two-person partnership......................... 2
Informal association........................... 3
Group practice (prepaid)....................... 4
Group practice (not prepaid)................... 5
Other (SPECIFY)________________________________ 6
____

(SKIP TO Q. 10)

9. (IF IN HOSPITAL-BASED PRACTICE)

In what hospital do you work?

Name of Hospital:______________________
City/Town:_____________________________
State:_________________________________

10. How would you characterize the largest group of the patient population in your current practice?

A. Ethnic/racial background: (CIRCLE ALL THAT APPLY)

White, not of Hispanic origin........... 1
Black, not of Hispanic origin........... 2
Hispanic................................ 3
American Indian or Alaskan Native....... 4
Asian or Pacific Islander............... 5

B. Socio-economic status: (CIRCLE ALL THAT APPLY)

Lower class............................. 1
Lower middle class...................... 2
Middle class............................ 3
Upper middle class...................... 4
Upper class............................. 5

11. What is your current annual net income? (CIRCLE ONE ONLY)

Less than $25,000	1
$25,000-49,999	2
$50,000-74,999	3
$75,000-99,999	4
$100,000-124,999	5
$125,000-149,999	6
$150,000 or more	7

C. INTERMEDIATE LOCATIONS AND PRACTICE

1. Excluding both your current and your first practices, in how many other states did you practice since you completed graduate medical training?

__________ states

(IF NONE, SKIP TO VIII, Q. 1)

1a. Please list these states

_________________________ _________________________

_________________________ _________________________

_________________________ _________________________

2. In how many communities did you work, excluding both your first and current communities?

__________ communities

VIII. PROFESSIONAL ACTIVITIES

This concluding section of the questionnaire inquires into your professional activities and your satisfaction with your medical career.

1. Since you completed your graduate medical training, did you have any academic appointments?

Yes	1
No	2

2. Have you published any scholarly articles since you completed your graduate medical training?

Yes	1
No	2

3. How many presentations at professional medical meetings have you given since you completed your graduate medical training?

__________ presentations

4. Looking back at your medical career thus far, how satisfied have you been with each of the following?

	Very Satisfied	Satisfied	Moderately Satisfied	Dissatisfied	Very Dissatisfied
Selection of graduate training program......................	1	2	3	4	5
Selection of specialty.........	1	2	3	4	5
Practice location..............	1	2	3	4	5
Type of practice...............	1	2	3	4	5
Professional development.......	1	2	3	4	5

THANK YOU

Appendix C:

Non-Technical Report

NON-TECHNICAL REPORT:

Study of the Functioning and Location of U.S. Citizen Foreign Medical Graduates Within the U.S. Medical Care System

I. OVERVIEW

Within the population of American physicians, U.S. citizens who received their medical education abroad (U.S. Foreign Medical Graduates--USFMGs) have emerged in the last decade as a growing health manpower source. The increasing presence of this group of physicians has raised numerous policy and research questions. The framework for addressing these questions is set forth in this report.

1.0 Trends in Federal Policies Regarding the Supply of Medical Personnel

Over the past twenty years, federal policies have undergone a rather dramatic transformation with respect to medical personnel. During the middle and late 1960s, the prevailing sentiment at the federal level was that existing supplies of medical personnel were insufficient to assure access to medical care for all segments of American society. Acting on the belief that access to adequate medical care could be achieved only if the nation's stock of medical personnel was increased, Congress enacted a series of legislative measures--such as the 1963 Health Professions Educational Assistance Act and the 1968 Health Manpower Act--aimed at enhancing the national supply of medical personnel.

By the mid-1970s, it had become clear that the previously perceived aggregate shortage of health care personnel, especially in terms of the supply of physicians, had been substantially reduced. Partly as a result of government policies encouraging growth in the nation's capacity to train physicians, the number of physicians practicing in the U.S. rose nearly 25 percent between 1963 and 1973. Despite this rapid growth in aggregate stock of physicians, serious local and regional shortages of physicians persisted into the late 1970s. In addition, the trend toward physician specialization had produced an imbalance between the supply of primary-care physicians and the supply of specialists.

Recognizing the twin issues of geographic maldistribution and inadequate supplies of primary-care physicians, Congress drafted new legislation aimed specifically at these problems. The Health Professions Educational Assistance Act of 1976 (PL 94-484) was designed expressly to increase the nation's supply of primary-care physicians (especially in family practice, internal medicine, and general pediatrics), and to address the problem of geographic maldistribution of such physicians. Supplies were to be increased via construction grants and capitation payments to medical schools, as well as through various student assistant programs. Maldistribution was to be addressed through financial incentive programs, which were offered to medical students who agreed to practice for certain periods of time in designated health manpower shortage areas. As Weisfeld (1980) notes, the Health Professions Educational Assistance Act (HPEAA) was also designed to slow growth in the supply of physician-specialists through--among other policies--restricting the entry of foreign physicians into the U.S. medical care system. Simultaneously, components of the HPEAA made it easier for U.S. citizens studying medicine abroad to transfer to U.S. medical schools.

There is evidence to suggest that the HPEAA has been an important force in altering the specialty distribution of physicians practicing in the U.S. In particular, data from the AMA publication Physician Distribution and Medical Licensure in the U.S., 1979 show that the stock of physicians specializing in internal medicine and pediatrics grew substantially between 1976 and 1979. This increase was substantial both in absolute numbers and in terms of the fraction of the total universe of physicians represented by these two specialties. Over the same time span, the aggregate stock of physicians in surgical specialties grew much more slowly and actually represented a smaller fraction of the universe of practicing physicians in 1979 than in 1976.

While evidence supports the contention that federal initiatives have had the desired effect upon aggregate supplies of particular physician specialties in the U.S. since 1976, little is known about the effects of such policies upon the stocks of USFMGs entering the mainstream of the American medical care system. Furthermore, little systematic information is available on the educational experiences and characteristics of the location and medical practices of USFMGs, who have become an increasingly important class of physicians.

The foregoing issues were addressed in this study in the form of eight key questions:

- What are the socioeconomic backgrounds of USFMGs?
- What are the characteristics of the foreign medical educational experiences of USFMGs?
- For those USFMGs who received graduate medical training in U.S. hospitals, what are the characteristics of these residency programs and what are the experiences of USFMGs in these residency programs?
- What are the characteristics of the practices of USFMGs in terms of specialty, practice organization, functioning, and population served?
- Where do USFMGs locate their practices, and have USFMGs shifted their practice locations over time?

- What are the career plans of USFMGs, and have they been realized?
- What are the interrelationships between USFMGs' practice specialties--primary-care, surgical, hospital-based, and other specialties--and their medical education, socioeconomic background, and other factors affecting the specialty choice decision?
- What are the interrelationships between USFMGs' choices of practice location and function, and factors such as socioeconomic background, medical training experience, and other relevant variables?

The conceptual framework developed in this study for addressing the above issues in a systematic and comprehensive manner was the 'medical education and practice continuum'.

1.1 The Medical Education and Practice Continuum

Over the past decade, the national aggregate supply of physicians has been the focus of much research and analysis. At the same time, one group of physicians--U.S. citizens who obtained their undergraduate medical degree in foreign countries (USFMGs)--has been the subject of relatively heated debate and controversy in the health services literature. This controversy, in the main, centers on the alleged uneven quality of the medical education received by some USFMGs abroad, and the implications of this charge for the expected performance of USFMGs in stateside practice.

While debate continues regarding the expected quality of care provided by USFMGs, surprisingly little attention has been directed toward developing baseline data on USFMGs who succeed in entering the U.S. medical care system. Even though data on the aggregate supply of USFMGs in America are sketchy, the available evidence suggests that foreign medical schools are becoming an increasingly important training ground for U.S. citizens seeking medical degrees. Stimmel and Beneson (1978) recently estimated that the number of Americans studying abroad reached 6,000 in 1978, a substantial increase over the estimated 2,800 Americans who studied medicine in foreign schools a decade earlier.

This increase in the number of American nationals attending foreign medical schools should not be taken as prima facie evidence that the path from foreign training to medical practice in the U.S. is an easy one. Indeed, this path-defined in this report as the medical education and practice continuum--is long and arduous.

The medical education and practice continuum is schematically represented in Figure 1. American nationals who initiate medical training overseas have open to them several avenues through which they can enter the mainstream of American medicine. For instance, U.S. foreign medical students may transfer into stateside medical schools after one or two years of medical education overseas. Among other requirements, students wishing to transfer must pass Part I of the National Board of Medical Examiners' (NBME) examination.* Since 1970, American students wishing to transfer from foreign to U.S. medical schools have been assisted by the Coordinated Transfer Application System (COTRANS). COTRANS is a cooperative venture of the Association of American Medical Colleges and the National Board of Medical Examiners who created it expressly to facilitate the transfer process. (Since transfer students ultimately graduate from American undergraduate medical schools, they are not included in the universe of USFMGs.)

Besides transfer via COTRANS, American citizens studying medicine abroad may avail themselves of other paths into the U.S. medical care delivery system. The USFMG may, for instance, succeed in completing all requirements of the medical degree abroad, including one or more years of post-degree training. At that point, the USFMG would be a candidate for the Federation Licensing Examination (FLEX) and, if able to obtain a passing score, would qualify for medical licensure in most states.

USFMGs who have completed their undergraduate medical education abroad--or at least, the formal course work required for the degree--may wish to apply for graduate training in a U.S. hospital. This is extremely important for the USFMG, since graduate medical training is generally a prerequisite for licensure in America.** A prerequisite for admission of a USFMG to an American graduate medical training program is certification by the Educational Commission for Foreign Medical Graduates (ECFMG). Prerequisites to certification are that the student has completed the full medical curriculum prescribed by the foreign medical school and has obtained a passing score on the ECFMG examination.

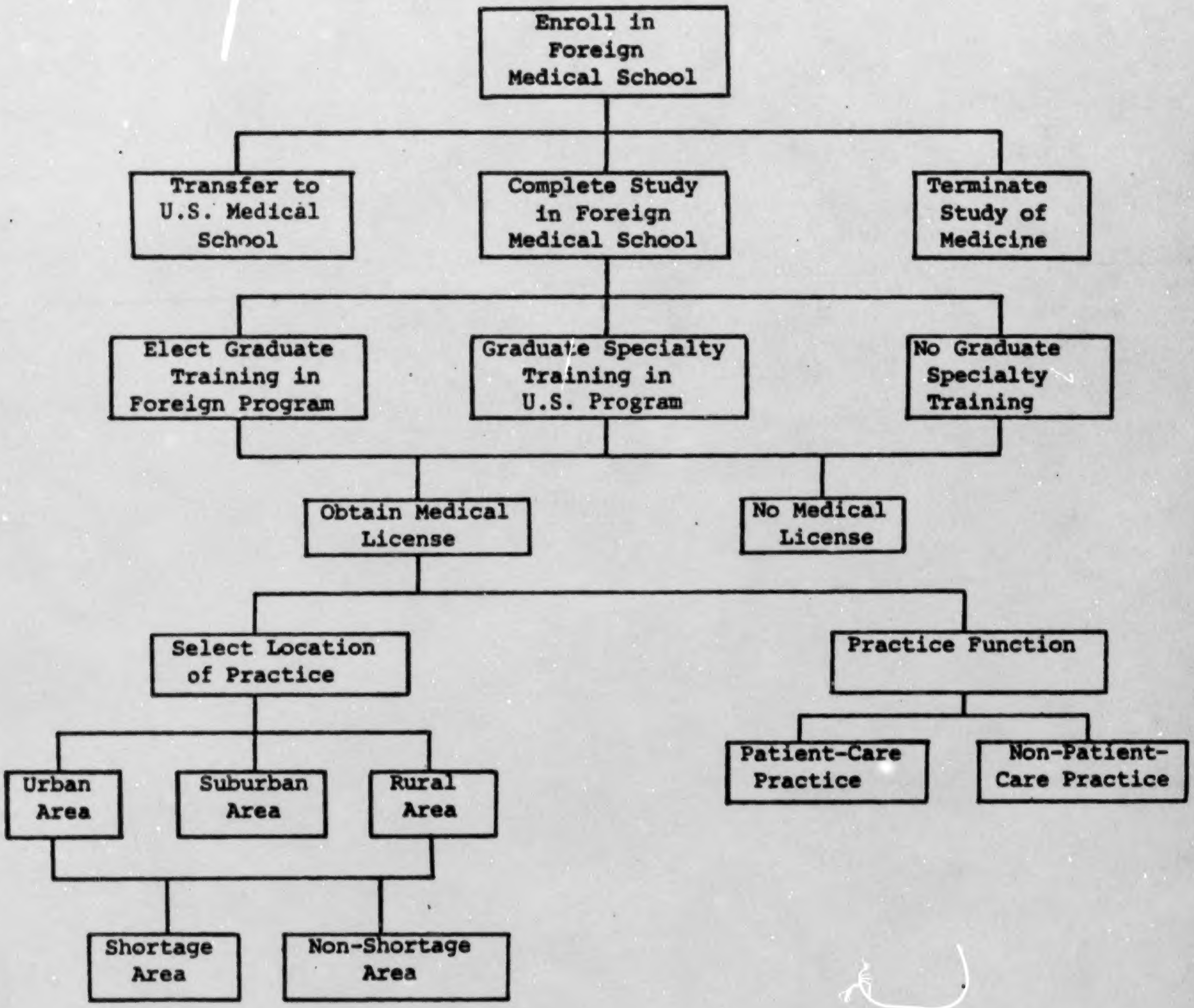
This certification requirement may, however, be waived if the student elects to enter the American medical care system via the Fifth Pathway. This route to graduate training in the U.S. was outlined in a 1971 policy statement of the Council on Medical Education of the American Medical Association.

---

*Part I of the NBME exmaination was replaced in June of 1980 by the Medical Science Knowledge Profile (MSKP).

**Only three states do not require that USFMGs obtain graduate training as a basis for licensure: Massachusetts, New Mexico, and Texas.

FIGURE 1: Medical Education and Practice Continuum of U.S. Citizen Foreign Medical Graduates (USFMGs)


Enroll in Foreign Medical School
Transfer to U.S. Medical School
Complete Study in Foreign Medical School
Terminate Study of Medicine
Elect Graduate Training in Foreign Program
Graduate Specialty Training in U.S. Program
No Graduate Specialty Training
Obtain Medical License
No Medical License
Select Location of Practice
Practice Function
Urban Area
Suburban Area
Rural Area
Patient-Care Practice
Non-Patient-Care Practice
Shortage Area
Non-Shortage Area

The Council's policy statement was basically a reaction by the U.S. medical community to the plight of U.S. citizens studying medicine in foreign countries (particularly Mexico), where medical schools require students to complete a year or more of unsupervised clinical or social service work following completion of all formal medical school course work.

In the Fifth Pathway program, American students who have completed formal course work abroad--and who have attained satisfactory scores on screening examinations (like the NBME-Part I, or the ECFMG)--are eligible for a year of supervised clinical training in the U.S. under the supervision of an American medical school. This year of supervised training is intended to substitute for the unsupervised clinical service requirement of the foreign medical school. Generally, students who complete the Fifth Pathway program are afforded the same vis-a-vis entry into a graduate training program as are the U.S. citizens who have graduated from a foreign medical school and who have attained ECFMG certification.

Of course, all USFMGs must ultimately satisfy the licensing requirements of the state in which they intend to practice. State licensure boards usually require USFMGs to obtain one or more years of graduate medical education in the U.S. and a score of 75 or greater on the FLEX exam as a prerequisite for licensure. (See Physician Distribution and Medical Licensure in the U.S., 1979 for further details.)

The establishment of a medical practice after completing graduate medical training constitutes the end point of the medical education and practice continuum framework developed in this study. Included at this point on the continuum are the initial, intermediate, and current practices of USFMGs, as well as actions on the part of an increasing number of physicians to become specialty board certified.

Within the scope of this project, the following definitions were utilized:

- Specialty. Specialties were classified into four categories: primary care, surgical, hospital-based, and other.
- Practice organization. Two major categories were used to describe practice organization: solo practice and group practice.
- Functioning. The concept of functioning included two major categories: patient-care and non-patient-care (i.e., administration, teaching, research).
- Practicing physicians. USFMGs who have completed their graduate medical training and who have established a patient-care or non-patient-care practice.

- Practice location. A physician's practice location was defined as urban, suburban, or rural, or as located in counties with shortage or non-shortage areas.

- Initial practice. The practice established by a physician after completing graduate medical training.

- Intermediate practice. The practice(s) maintained by a physician subsequent to initial practice, but preceding current practice.

- Current practice. The practice maintained by a physician at present, if different from initial practice.

1.2 Study Design

A sample of 1,000 USFMGs who graduated from foreign medical schools between 1970 and 1979 was selected. The sample included 850 USFMG practicing physicians and 150 USFMG interns/residents. Each of the samples was stratified by year of graduation from foreign medical school. The size of each "year of graduation" sample stratum was proportional to its size in the respective universe of USFMGs. The sample was selected from the AMA Physician Masterfile.

The sample of 150 USFMGs who graduated from foreign medical schools between 1970 and 1979, and who are currently either interns or residents, was selected using the following step-by-step procedures:

- Of the universe of 1,929 USFMG interns and residents, the percent of each "year of graduation" stratum was determined.

- The sample size of each stratum was calculated next.

- Finally, USFMG interns and residents were randomly selected within each stratum.

To select the sample of 850 USFMGs who are currently practicing physicians, all USFMGs who graduated from foreign medical schools between 1970 and 1979 (excluding interns, residents, and USFMGs whose address was unknown or who were practicing abroad) were aggregated into a single group, described as the "USFMG practicing physician universe." The practicing physician sample was selected in a similar manner.

Two survey instruments were constructed: one for USFMG practicing physicians and one for USFMG interns/residents. Both instruments were structured along the medical education and practice continuum. The instruments inquired into:

- socioeconomic background
- pre-medical education
- attempts to enroll in a U.S. medical school
- characteristics of foreign medical education
- attempts to transfer to a U.S. medical school
- participation in the Fifth Pathway program
- the ECFMG examination
- graduate medical training
- licensure (FLEX)
- specialty board certification
- practice location:
  - residents' location and practice plans
  - practicing physicians' initial, intermediate, and current practice location characteristics
- professional activities

The instruments were pre-tested on nine randomly selected USFMGs in February of 1982, and revised as necessary.

Data were collected from sampled USFMGs in a mail survey. The survey, conducted from July to September of 1982, included two mailings and a telephone follow-up of all non-respondents. Of the 1,000 sampled USFMGs, 223 USFMGs could not be reached due to wrong address information. Of the 771 USFMGs who could be reached, 463 (60.1%) responded to the survey. Responding USFMGs included 112 interns/residents and 351 practicing physicians.

To determine the degree to which responding USFMGs were representative of the whole population of USFMGs, two analyses were conducted. Respondents were compared with non-respondents on the basis of data available from the AMA. These comparisons indicated that USFMG respondents and non-respondents did not differ significantly. In addition, the sample of respondents was compared with the overall population of USFMGs who graduated from foreign medical schools between 1970 and 1979. The sample of respondents did not differ from the population of USFMGs in terms of their distribution by year of graduation from foreign medical schools.

The survey data were then merged with AMA data on USFMGs. The results of the data analysis are presented in the following sections.

II. STUDY FINDINGS

2.0 Socioeconomic Characteristics

Nearly all surveyed USFMGs were male and Caucasian. Most were brought up in the Northeastern United States, in communities ranging widely in size. USFMGs' parents were well educated; one-fifth had physician fathers. USFMGs attended private colleges more often than state colleges and majored, in most cases, in biological sciences.

2.1 Foreign Medical Education

USFMGs graduated from college at an average age of 22.5 and entered medical school 1.5 years later, at an average age of 24. The surveyed USFMGs studied in a large number of schools located in 24 countries. Most studied in Mexico, Italy, or Western Europe. The most commonly attended schools were the University of Guadalajara in Mexico, and the Universities of Bologna and Rome in Italy. On the average, it took USFMGs five years to complete medical school; most performed well academically.

To finance their foreign medical education, USFMGs used multiple sources of financial assistance. Most USFMGs used a combination of the following five sources:

- personal savings
- parents' financial assistance
- spouse's financial assistance
- federal (U.S.) financial assistance
- state financial assistance.

Nearly all USFMGs were financially assisted by their parents. Over one-half used their personal savings. Approximately 20 to 30 percent also received state or federal financial aid. USFMGs who grew up in rural communities were more likely to obtain federal financial aid than USFMGs who grew up in urban or suburban areas. U.S. federal financial aid was also more frequently provided to USFMGs who attended Mexican medical schools and to USFMGs in primary care and "other" specialties. After completing their medical education, recipients of U.S. federal financial aid tended to locate their initial practice in rural or suburban communities rather than in urban communities. USFMG recipients of state financial aid tended to locate their practice in counties with shortage areas twice as often as in counties with non-shortage areas.

USFMG satisfaction with the medical education they had received varied by country of medical school. Overall, USFMGs who studied in Western Europe were most highly satisfied with all components of their medical education. USFMGs who studied in Mexico were least satisfied with their schools' facilities, equipment, faculty, curriculum, and clinical training. Among these components, USFMGs were least satisfied with the quality and quantity of clinical training they had received. To supplement the clinical training provided by the foreign medical schools, a majority participated in self-arranged, clinical training programs in U.S. hospitals, while they attended foreign medical schools.

2.2 Coordinated Transfer Application System (COTRANS)

At this point on the medical education and practice continuum, two paths are available to U.S. citizens who study medicine abroad. They can either complete their medical education in the foreign country, or attempt to transfer with advanced standing to a U.S. medical school, via COTRANS.

USFMGs' degree of disatisfaction with their foreign medical education was related to their attempts to transfer with advanced standing to a U.S. medical school. Significantly more USFMGs who studied in Mexico tried to transfer than from any other country. Overall, about one-third of surveyed USFMGs attempted to transfer. Only a few were accepted, but even they decided to complete their medical education abroad.

2.3 Fifth Pathway Programs

The Fifth Pathway program provides an alternative way for USFMGs to enter the American medical education system. This program, established in 1970, was available to USFMGs who studied medicine in schools that require a year of internship or social service before granting the medical degree. The program provides a year of supervised undergraduate clinical training in the United States.

Over one-half of the USFMGs participated in the program, including the majority of those who studied in Mexico.

2.4 The ECFMG Examination

USFMGs are required to take the ECFMG examination in order to enter a graduate medical training program in the United States. Nearly all surveyed USFMGs took the ECFMG examination and obtained their graduate medical training in the United States. However, USFMGs' scores on the ECFMG examination averaged only marginally above the score required for passage, and one-third of the USFMGs had to repeat the examination. The number of times USFMGs had taken the ECFMG examination and the scores they obtained differed significantly by country of foreign medical education.

2.5 Graduate Medical Training

USFMGs participated in a large number of graduate medical training programs distributed across the United States. The largest group of USFMGs--one-third--participated in graduate training programs located in New York State. Only one-half of the USFMGs chose their graduate medical training program through the National Resident Matching Program. Generally, USFMGs made their own program arrangements.

During their graduate medical training, USFMGs encountered a variety of problems which they attributed to their foreign medical education and to their USFMG status. Additudinal problems were most prevalent. USFMGs complained about the attitudes of faculty toward them, and about the attitudes exhibited on the part of other FMG residents. USFMGs also encountered difficulties in performing general hospital duties--a reflection of deficiencies in the clinical training they had received in their foreign medical school--and felt that their knowledge of basic medical sciences was lacking.

Negative faculty attitudes were experienced by USFMGs regardless of the country in which they had received their medical education. However, USFMGs who studied medicine in Mexican schools experienced more difficulty, due to the gaps in their knowledge of basic medical sciences. USFMGs who graduated from Italian or West European schools found the performance of general hospital duties their major area of difficulty.

2.6 Licensure

Before they can practice medicine, USFMGs (like all U.S. physicians) are required to take the Federation Licensing Examination (FLEX). Nearly all surveyed USFMGs were licensed. The largest group of USFMGs was licensed to practice medicine in New York State.

2.7 Specialty Choice

During their graduate medical training, the surveyed USFMGs chose 26 areas of specialization. Most often USFMGs chose to specialize in internal medicine, family medicine, general surgery, pediatrics, diagnostic and therapeutic radiology, and psychiatry. Primary-care specialties were most prevalent (selected by two-thirds of USFMGs). Over one-tenth of the USFMGs chose surgical specialties, and fewer than one-tenth selected hospital-based specialties.

In selecting their specialty, USFMGs were most often motivated by the "attributes" of the specialty. Attributes considered most important were: the patient contact associated with a specialty and the encouragement USFMGs received from others who trained in the specialty. These factors also appeared to be important for USFMGs in each of the four specialty categories. The demand for a specialty and the income potential associated with a specialty were not perceived as important factors in specialty choice.

2.8 Specialty Board Certification

All physicians find that specialty board certification is a slow process, although an increasing number of them recognize it as necessary. Over one-half of the USFMG practicing physicians were specialty board certified. Most USFMGs had been certified in the four years prior to this study. Primary-care physicians tended to be specialty board certified more often than physicians with surgical and hospital-based specialties.

2.9 Medical Specialty and Practice Location Characteristics

Medical specialty differentiated little among initial practice type and practice location characteristics. USFMGs in all specialty categories tended to locate their initial practice in communities ranging widely in size, type (urban, suburban, rural), and geographic region. Office-based practice was, as expected, most typical of the primary-care physician. Solo practice was most prevalent among physicians in the "other" specialty category, and a two-person partnership was most common among physicians in surgical specialties. USFMGs in the hospital-based specialties tended to engage in non-patient medical activities (such as teaching and research) more frequently than USFMGs in the other three specialty categories.

Physicians in hospital-based and "other" specialties tended to have patients with lower socioeconomic characteristics and minority background more often than physicians in the primary-care and surgical specialties.

Fewer than one-fifth of the USFMG practicing physicians changed their practice location. Physicians in primary-care specialties tended to relocate more frequently than physicians in the other three specialty categories.

2.9.1 Multivariate Analysis of Specialty Choice

The respondents' specialty choices were also analyzed using multivariate analysis, which evaluated the relative influence of a number of factors on whether a USFMG entered a primary-care specialty. The results indicate that specialty choice could not readily be predicted by the personal and environmental characteristics included in the model, such as academic ability and medical school location. Only one characteristic--an indicator of whether the respondent's father was also a physician--proved to be significantly associated with specialty choice. USFMGs with physician fathers were, on average, less likely to choose primary-care specialties. It must be inferred that other unmeasured factors must explain specialty choice.

2.10 USFMG Practice Location

USFMG practice locations were divided into three categories: initial practice location (practice location upon completion of graduate medical training), current practice location, and intermediate practice locations (practice locations selected between initial location and current location). Since the majority of USFMGs have not changed their practice location, most of the analysis focused on initial practice and location characteristics.

After completing their graduate medical training, USFMGs located their practice all over the country (in 40 states). Most frequently, USFMGs located their initial practice in New York, California, or New Jersey. Most USFMGs chose to practice in small- to medium-sized communities. Nearly 50% of the USFMGs practiced in urban areas; nearly 40% had suburban practices; and approximately 20% established practice in rural areas.

2.10.1 Factors Involved in Practice Location Choice

USFMGs were asked to identify the "important" or "very important" factors in their practice location choice. Five types of practice location choice factors were identified:

- professional opportunities available in the area
- community characteristics
- familial considerations
- personal preferences
- USFMG familiarity with the area and community.

Factors relating to the professional opportunities offered by the area were reported as most important in USFMGs' practice location decisions. These factors also emerged as most important in determining USFMG practice location choice. USFMGs regarded the following factors as important.

- the availability of clinical support facilities and personnel
- opportunities for regular contact with other physicians
- access to continuing medical education
- the opportunity to join a desirable practice.

The last factor--the opportunity to join a desirable practice--was also identified most frequently as the single most important factor in practice location choice.

Other factors that one-half or more of the surveyed USFMG practicing physicians regarded as important were a mix of personal preference, familial, and community factors. These factors included:

- preference for urban, suburban or rural living
- quality of the local education system for children
- opportunities for social life
- cultural advantages of area
- climate or geographic features of area
- income potential.

Income potential was the second most highly ranked factor in determining practice relocation.

Factors that USFMGs considered of least importance in their practice location choice related to USFMG familiarity with the area. Other factors considered of marginal importance were the availability of loans, community efforts to recruit physicians, and prospects of being influential in community affairs.

2.10.2 Practice Characteristics: Initial Practice

USFMGs have been in their initial practice from 1 to 11 years. On the average, they have maintained their initial practice for 2.35 years. Since most of the USFMGs who graduated from foreign medical schools between 1970 and 1979 have been in practice for a relatively short time, the majority were still in their initial practice phase.

Most USFMGs were in patient-care practice and maintained an office-based practice. Most frequently they had either a solo or a group practice. Approximately one-third had a hospital-based practice. USFMGs not involved in patient-care were divided among medical teaching, research, and administration.

USFMG practicing physicians had an average annual income of $63,833. Those practicing in rural communities reported the highest annual income; those practicing in suburban communities reported the lowest average annual income. USFMGs' annual income also varied, as expected, by specialty categories. USFMGs in surgical specialties had significantly higher annual incomes than USFMGs in any of the other three specialty categories. The second highest annual income was reported by USFMGs in hospital-based specialties, followed by primary-care physicians, and USFMGs in the "other" specialties category.

2.10.3 Practice Characteristics: Current Practice

Only a small group of USFMGs (n=60) relocated their practice. Most practice relocations took place in the three years prior to this study. USFMGs relocated their practices in 20 states, in communities whose size and urban/suburban/rural characteristics resembled those of the communities in which their initial practice had been located.

USFMGs decided to relocate their practice mostly as a result of emerging professional opportunities and the income potential associated with these opportunities USFMGs who relocated their practice were mostly in patient-care and had an office-based practice. One-third of this group were hospital-based.

The overwhelming majority of USFMGs had only one practice since completing their graduate medical education. Only 60 USFMGs had relocated their practice once, and only 11 USFMGs had relocated their practice twice or more.

2.10.4 Practice Characteristics: Resident Location and Practice Plans

Residents' practice location plans varied greatly. About two-fifths of the residents were uncertain about their future practice location. About one-quarter planned to locate in a different state than the state in which they had received their graduate medical education, and one-third planned to locate their practice in the same state. Decisions about their practice location were most frequently based on a mix of familial and professional considerations, including: educational opportunities for children, availability of hospital appointments, openings in specialty, and cultural and social opportunities available in the area. As with USFMG practicing physicians, previous familiarity with an area (due to growing up, attending college, or doing military service there) was the least important practice location determinant.

As with USFMG practicing physicians, most residents chose patient-care, office-based types of practice.

2.10.5 Movement Within and Across States (State Location Analysis)

The state location analyses were conducted for all surveyed USFMGs, as well as separately for residents and practicing physicians.

To track USFMGs' state location history, data were collected about their residence during various milestones in their lives. USFMGs were asked to identify the state in which:

- they had lived for the longest period before they went to college
- they went to college or university
- they received clinical training while they were students in a foreign medical school
- they received clinical training as part of their participation in the Fifth Pathway program
- they received graduate medical training
- they set up their initial practice
- they set up their current practice location, if different from initial practice location.

Only the first five state location milestones applied to all surveyed USFMGs. Approximately one-half of the surveyed USFMGs remained in their home state throughout their education and training. USFMGs tended to attend college, receive clinical training while in foreign medical school, participate in Fifth Pathway programs, and obtain their graduate medical training in their home state. The location of the clinical training program during foreign medical school and the location of the Fifth Pathway program most frequently accounted for USFMG choice of graduate medical training programs. USFMGs tended to select graduate medical training programs located in the same state in which they had received clinical training.

The location of the clinical training program during foreign medical school and the location of the Fifth Pathway program accounted most frequently for the location of the graduate medical training program also for USFMG interns/residents. Their plans for practice location, however, were most dependent on the state location of their graduate medical training program.

The location of the graduate medical training program most commonly determined initial practice location for USFMG practicing physicians. USFMG practicing physicians whose current practice location differed from their initial practice location tended in all cases to relocate their practice in the state in which they had received clinical training while still students in foreign medical schools. For two-thirds of these practicing physicians, current practice location was in the same state as their initial practice.

2.10.6 Regional Location Analysis

To determine the extent to which USFMGs tended to stay during their education, training, and practice in the same geographic region, USFMGs' location during the previously identified milestones was analyzed. The regional analysis conducted for all surveyed USFMGs, for residents, and for practicing physicians was based on the hypothesis that a large proportion of USFMGs would tend to stay in the same geographic region throughout their education, training and practice. This hypothesis was confirmed in all regional analyses: approximately 10% of the USFMGs who did not stay in their home state remained in the same geographic region.

The home region, the region in which USFMGs received clinical training during their foreign medical curriculum, and the Fifth Pathway program region accounted for the regional location of over 70% of all surveyed USFMGs, USFMG residents, and USFMG practicing physicians.

The regional location of USFMGs' graduate medical training programs accounted most often for the (regional) initial practice location chosen by USFMG practicing physicians. However, given the fact that home region was most strongly associated with the regional location of USFMGs' graduate medical training programs, over one-half of the practicing physicians located their initial practice in their home region. Current practice location (if different from initial location) was most closely associated with the region in which USFMGs participated in clinical training while in foreign medical school and in Fifth Pathway programs.

2.10.7 Urban, Suburban, and Rural Practice Locations

The purpose of the urban, suburban, and rural practice location analysis was to determine the extent to which USFMGs tended to locate their practice in types of communities familiar to them.

USFMGs grew up mostly in urban and suburban communities. Only one-tenth grew up in rural areas. The distribution of the types of communities in which USFMGs located their initial practice was different, to some extent, from the distribution of USFMGs' home communities. The number of USFMGs who located their initial practice in rural areas was larger than the number who grew up in such areas. In fact, over one-tenth of the physicians who were raised in urban and suburban communities established their initial practice in rural communities. On the other hand, USFMGs who grew up in rural areas were as likely to locate their practice in rural areas as in urban or suburban areas. Overall, more than one-half of the physicians in each of the three groups tended to locate their initial practice in the same type of community in which they had grown up.

The specialty distribution of USFMGs located in urban, suburban, and rural communities varied somewhat, although a mix of all specialty categories was present in each community type. USFMGs in primary-care specialties were concentrated in a larger proportion in suburban communities, while USFMGs with surgical specialties were more likely to locate in rural and urban communities.

This specialty-mix distribution was further reflected in the types of practice maintained by USFMGs located in the three types of communities. Physicians with practices in suburban and rural areas tended to have office-based practices more than physicians in urban centers. USFMGs with practices in urban areas were more than twice as likely to establish a hospital-based practice than suburban or rural USFMG physicians; they also tended to engage more frequently in non-patient care activities.

Of the various office-based types of practice, solo practices were more prevalent in rural areas and partnerships were more frequently reported by suburban physicians. Group practices were reported twice as often by suburban and rural physicians as by urban physicians.

USFMGs with practices in urban, suburban, and rural communities differed, to some extent, in terms of age, family size, and parent's occupation. Physicians located in urban areas tended not to have children, were more likely to have physician fathers, and were older, on the average, when they established their initial practice. Physicians in rural areas tended to be younger, on the average, to be married, and to have children. Rural physicians also exhibited the shortest initial practice duration compared with urban and suburban USFMG physicians. Nearly all USFMG physicians, regardless of the type of community they chose, had unlimited, full licenses. Rural physicians were as likely as urban physicians to be specialty board certified.

Physicians located in urban and suburban areas were more likely to establish their initial practice in the same state in which they participated in a graduate medical education program than were physicians who established their initial practice in rural areas. Over one-half of the physicians with urban and suburban practices located their initial practice in their home state. USFMGs with rural practices were more likely to locate their initial practice in a state different from their home state, college state, or graduate medical training state.

The three groups of physicians also differed in terms of their location determinants. USFMGs who chose to establish their initial practice in an urban area, reported that professional factors were most important in their location decision. USFMGs whose initial practice was located in suburban areas identified a mix of professional, familial, and personal preference factors. Rural USFMG practicing physicians put more emphasis on familial and social factors than on professional, career-related factors. Of the five factors perceived as important location determinants by USFMGs with rural practices, only one factor was career-related: "availability of clinical support facilities and personnel." The opportunity to join a desirable practice, however, was identified by all USFMG practice location physicians, regardless of community type location, as the most important location determinant.

2.10.8 Multivariate Analysis of Practice Location Choice

Multivariate analysis was also used to evaluate the influence of several types of factors on the respondents' location decisions. Two outcomes were analyzed. The first was the type of community in which the initial practice was located (i.e., urban, suburban, or rural). The second was whether the USFMG located his/her practice in a county with a shortage area. Factors such as type of home community and characteristics of the medical education were taken into account. The results indicated that the type of home community was a significant predictor of the type of community in which the USFMG would practice, in that practice locations were more likely to be similar in character to the physician's home community. Specialty was also a significant determinant, since primary-care physicians were more likely to locate in non-urban areas. Finally, graduates of Mexican medical schools and those who received government financial assistance were less likely to locate in urban areas.

Practice in a county with a shortage area proved to be as difficult to predict as specialty choice. Most of the factors included in the analysis proved to have no effect on this type of location decision. There was, however, some limited evidence to indicate that USFMGs who came from rural communities and who received government financial aid were more likely to practice in or near a shortage area, while graduates of Mexican schools receiving such aid were less likely to do so.

Conclusions

While the results of this study are preliminary, they do provide a basis for guiding future research and policy development.

Within a research context, this study has identified a series of variables that significantly affect USFMG specialty choice and practice location characteristics. Such variables as sources of financial aid used by USFMGs to finance their foreign medical education, USFMGs' performance in graduate medical training programs, and USFMGs' tendency to remain in their home state for their educational and professional milestones, need to be explored in greater depth.

Of particular research and policy relevance are USFMGs who have established practice in shortage areas, or who have chosen primary-care specialties. The sampling methodology used in this study limited the exploration of these USFMG subpopulations. Future research methodology should be targetted to these subpopulations.

Finally, to determine the status of USFMGs and their contribution to the U.S. medical care delivery system, the USFMG population must be examined within a comparative context. Comparisons of USFMGs with U.S. trained physicians (USFMGs) will be critical in refining the USFMG profile and in determining their specialty choice and practice location characteristics.